```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum
Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 on:
          Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB BB
       59.55

69.55

69.55

69.55

69.55

69.55

69.55

69.55

69.55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Į.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    No. is the number of results predicted by chance to have a greater than or equal to the score of the result being printed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    derived
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Issued_Patents_AA:*
(-ggn2_6/ptodata/1/iaa/5A_COMB.pep:*
/-cgn2_6/ptodata/1/iaa/5B_COMB.pep:*
/-cgn2_6/ptodata/1/iaa/6A_COMB.pep:*
/-cgn2_6/ptodata/1/iaa/6B_COMB.pep:*
/-cgn2_6/ptodata/1/iaa/FCTUS_COMB.pep:*
/-cgn2_6/ptodata/1/iaa/backfiles1.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-941-947A-14
806
1 MIRVGMGYDVHRFNDGDHII......IGFEGRKEGIAVQAVVLIBR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 January 29,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                328717 seqs, 42310858 residues
     110.00
110.00
110.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.00
10.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20000000000
     2004, 15:45:34 ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GenCore version
(c) 1993 - 2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gapext 0.5
US-09-252-991A-2128
US-09-198 452A-585
US-09-198 452A-585
US-09-252-991A-24743
US-09-252-991A-32685
US-09-252-991A-2063
US-09-252-991A-2063
US-09-252-991A-2063
US-09-252-991A-2063
US-09-252-991A-2063
US-09-252-991A-2063
US-09-252-991A-2063
US-09-252-991A-2063
US-09-252-991A-21699
US-09-252-991A-28466
US-09-252-991A-28696
US-09-252-991A-28696
US-09-252-991A-28696
US-09-252-991A-28696
US-09-252-991A-28696
US-09-252-991A-28696
US-09-252-991A-28696
US-09-252-991A-28696
US-09-252-991A-28696
US-09-252-991A-28184
US-09-252-991A-3144
US-09-252-991A-3144
US-09-252-991A-3144
US-09-252-991A-3144
US-09-198-452A-314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; Search time 4.92742 Seconds (without alignments)
1348.130 Million cell updates
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5.1.6
Compugen Ltd.
                                                                                                                                                                                              Sequence
                                                                                                                       Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              cell updates/sec
                          21128, App 585, App 24743, App 32625, App 11149, App 12625, App 12626, App 11626, App 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21228,
```

RESULT 1 US-09-252-991A-21228 Sequence 21228, Ap Patent No. 6551795 GENERAL INFORMATIO APPLICANY: WARC TITLE OF INVENTIO FILE REFERENCE: CURRENT APPLICATION FILE REFERENCE: CURRENT FILING DATE PRIOR APPLICATION PRIOR FILING DATE PRIOR APPLICATION PRIOR APPLICATION PRIOR APPLICATION PRIOR APPLICATION PRIOR APPLICATION PRIOR APPLICATION PRIOR FILING DATE PRIOR PRIOR PED ID PRIOR PRIOR PRIOR DATE PRIOR PRIOR PRIOR DATE PRIOR PRIOR PRIOR DATE PRIOR PILING DATE		00000000000000000000000000000000000000
SULT 1 -09-252-991A-21228 Sequence 21228, Application . Patent No. 6551795 PAPPLICAME: MARC J. Rubenfi. TITLE OF INVENTION: NUCLEI. TITLE OF INVENTION: AERUGII. FILE REFERENCE: 107196.136 CULRENT APPLICATION NUMBER: 1999- PRIOR APPLICATION NUMBER: 1991- PRIOR FILING DATE: 1998-07 PRIOR APPLICATION NUMBER: 1991- PRIOR FILING DATE: 1998-07 PRIOR APPLICATION NUMBER: 1991- PRIOR APPLICATION NUMBER: 1991- PRIOR FILING DATE: 1998-07 PRIOR APPLICATION NUMBER: 1991-07 PRIOR APPLICATION NUMBER: 1991-07 PRIOR APPLICATION NUMBER: 1991-07 PRIOR APPLICATION NUMBER: 1991-07 PRIOR SEQ ID NOS: 3314.		6 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
1A-21228 1228, Applic 6551795 FORWATION: INVENTION: INVENTION: INVENTION: INVENTION: INVENTION: ILLOATION OPPLICATION NUM ILLOATION NUM ING DATE: 1 LICATION NUM ING DATE: 1 LICATION NUM ING DATE: 1 SEQ DATE: 1		
B Splication US/0925 S NO: NR. RADERFIEL & CID NI. NUCLBIC ACID NI. AERUGINOSA EC 107196.136 ION NUMBER: US/09/ TON NUMBER: US/09/ NTE: 1999-02-18 N. NUMBER: US 60/0 B: 1998-07-27 NOS: 33142		4 4 4 4 9 5 5 5 0 5 5 5 5 0 5 5 5 5 0 5 5 5 0 5 5 5 5 0 5 5 5 5 0 5 5 5 5 0 5 5 5 5 0 5 5 5 5 0 5 5 5 5 5 0 5 5 5 5 5
n US, Eielc SINO SINO SINO SINO SINO SINO SINO SINO		A A H H H H H H H H A A A A A A
SULT 1 -09-252-991A-21228 -09-252-991A-21228 Sequence 21228, Application US/09252991A Patent No. 6551795 GENERAL INFORMATION: APPLICANT: Marc J. Rubenfield et al. TITLE OF INVENTION: NUCLBIC ACID AND AMINO ACID SEQUENCES RELATITILE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS FILE REFERENCE: 107196.136 CURRENT APPLICATION NUMBER: US/09/252,991A CURRENT FILING DATE: 1999-02-18 PRIOR APPLICATION NUMBER: US 60/074,788 PRIOR APPLICATION NUMBER: US 60/074,788 PRIOR APPLICATION NUMBER: US 60/094,190 PRIOR APPLICATION NUMBER: US 60/094,190 PRIOR RILING DATE: 1998-07-27 NUMBER OF SEQ ID NOS: 33142 SEQ ID NO 21228	ALIGNMENTS	US-09-252-991A-23781 US-09-252-991A-30150 US-08-354-240A-2 US-08-354-240A-4 US-08-354-240A-6 US-08-867-352-23 US-08-718-425-2 US-08-718-425-2 US-08-715-277A-2 US-08-875-277A-2 US-08-875-277A-4 US-09-380-061B-6 US-09-380-061B-21 US-09-380-061B-21 US-09-602-628-6 US-09-602-628-6 US-09-602-628-6 US-09-602-628-8
NCES RELATING TO PSEUDOMONAS ERAPEUTICS		Sequence 23781, A Sequence 30150, A Sequence 2, Appli Sequence 4, Appli Sequence 6, Appli Sequence 23, Appli Sequence 2, Appli Sequence 5, Appli Sequence 6, Appli Sequence 6, Appli Sequence 10, Appli Sequence 11, Appli Sequence 4, Appli Sequence 6, Appli Sequence 12, Appli Sequence 13, Appli Sequence 21, Appli Sequence 3, Appli Sequence 3, Appli Sequence 12, Appli Sequence 12, Appli Sequence 12, Appli

RESULT 2 US-09-328-352-7561 Ś 8 Ś 뮍 δ ; LENGTH: 164 ; TYPE: PRT ; CRGANISM: Pseudomonas aeruginosa US-09-252-991A-21228 Sequence 7561, Application US/09328352
Patent No. 6562958
GENERAL INFORMATION:
APPLICANT: GATY L. Breton et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING
TITLE OF INVENTION: BAUMANNII FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: GTC99-03PA
CURRENT APPLICATION NUMBER: US/09/328,352
CURRENT FILING DATE: 1999-06-04 Query Match
Best Local Similarity
Matches 110; Conserv 128 GVAVDQVNVKATTTERLGFTGREEGIAVHAVALL 161 122 89 62 EPDTDENFKGADSRVLIRHVYGIVKEKGYKLVNADVTIIAQAFKMLPHVPGMRANIAADL ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155 FPDTDPRFKGADSRALLRHVVAIVABKGWKVGNVDATIVAQAPKMAPHIBTMRGLIAEDL Conservative 71.3%; 71.4%; ; Score 575; DE ; Pred. No. 9.4e 17; Mismatches DB 4; La).4e-63; nes 27; Length 164; Indels o ; Gaps ö ACINETOBACTER 121 127 67 61 0

```
; TYPE: PRT
; ORGANISM: Chlamydia
US-09-198-452A-585
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 3
US-09-198-452A-585
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                     US-09-252-991A-24743
                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                         RESULT 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 585, Application US/09198452A
Patent No. 6559294
GENERAL INFORMATION:
APPLICANT: Griffais, R.
TITLE OF INVENTION: Chlamydia pneumoniae genomic sequence and polypeptides,
TITLE OF INVENTION: thereof and uses thereof, in particular for the diagnos
TITLE OF INVENTION: and treatment of infection
FILE REFERENCE: 9710-003-999
CURRENT APPLICATION NUMBER: US/09/198,452A
CURRENT FILING DATE: 1998-11-24
NUMBER OF SEQ ID NOS: 6849
SEQ ID NO 585
LENGTH: 199
TYPE: DESC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local :
                                                                                                                                                  GENERAL INFORMATION:
APPLICANT: Marc J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                          Sequence 24743, Ap
Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQ ID NO 7561
APPLICANT: Marc J. Rubenfield et al.

TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS

TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS

FILE REFERENCE: 107196.136

CURRENT APPLICATION NUMBER: US/09/252,991A

CURRENT FILING DATE: 1999-02-18

PRIOR APPLICATION NUMBER: US 60/074,788

PRIOR FILING DATE: 1998-02-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM: Acinetobacter baumannii -09-328-352-7561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQ ID NOS: 8252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
                                                                                                                                                                                                                                                                                                                      155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               130
                                                                                                                                                                                                                                                                                                                                                                                                     100 KVADELLQT----RGITDSGIYLEEALKSLK-PNQKISHVAITIEGSRPKFLCKLSALRQ 154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   122 ETDVDFINVKATTTEKIGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 94;
                                                                                                                                                                                                                                                                                                                                                                                                                                             57 DIGKHEPDTDPNFKG-ADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGKRA 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3 RVGMGYDVHRF---NDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAA---ALG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2 IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH 61
                                                                                                                                                                                                                                                                                                                      NIAQVMNLTPTDIGITATSGEGLSDFGCGDGVQCFCVLTV 194
                                                                                                                                                                                                                                                                                                                                                              NIAADLETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RTGIGQDSHRFLPESSTKPCILGGIIFDHCPGFQANSDGDIIFHAICNAISSVTNKIILG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NVDLNQISIKATTTEKLGFTGRQEGILATATVLI 163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IRIGQGMDVHAFEEGNEVTLAGVQIPHTHGLKAHSDGDVVLHALCDALLGALALGDIGQH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FPDTDPEFKGADSRVLLKHVYQLILDRGYHLNNADITVACERPKLAKYNLEMRQSIADVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                          Application US/09252991A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19.0%; Score 153; DB 4; Length 199; 29.4%; Pred. No. 9.3e-11; rive 26; Mismatches 75; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 496; DB 4;
Pred. No. 4.9e-53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 165;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             diagnosis,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               fragments
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             preve
```

```
RESULT 6
US-09-252-991A-32625
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 5
US-09-252-991A-26787
                                                                                                                                                                                                                                                                                                                           묽
                                                                                                                                                                                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                                                                                                                                                                                                    븅
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; ORGANISM: Pseudomonas aeruginosa 
US-09-252-991A-26787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-252-991A-24743
                                                                Patent No. 6551795

GENERAL INFORMATION:
GENERAL INFORMATION:
GENERAL INFORMATION:
GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT:
MICC. ACID AND AMINO ACID SEQUENCES RELATING
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQ ID NO 26787
LENGTH: 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 26787, Ap
Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 24743
                                                                                                                                                                                                            Seguence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CURRENT FILING DATE: 1999-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LENGTH: 493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local
                                                                                                                                                                                                                                                                                                                                                                        102
                                                                                                                                                                                                                                                                                                                                                                                                                    141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    185 GLGEQVH----GDPVGIGLAIADHEDFRGTGDHVDADLAEH-----
                                                                                                                                                                                                                                                                                                                           197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         230 -----DVAGADDLVHPRHAFGAVGQRGHGLCPAD 258
                                                                                                                                                                                      32625, Ap
). 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             81 LIRVGLAFRGLHRLADEEAEHLAALGLVGSAVLLDLLGVGRQHLVEHLLDGATVGDLLQA 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 v
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 MIRVGMGY-DVHRFND------GDHIILGGVKIPYEKGLEAHSDGDVV---LHA 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            h 9.9%; Score 79.5; DB 4; Similarity 23.3%; Pred. No. 0.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                     QAPKMIPHVPGMRANIAADLETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                      LGLDDLYGGTLA---VGHGFEDHLGDLAG-DGVVLDAQDHAAQLLGGHRGLLDLQAVLVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNAD 96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GMGYDVHRFNDGDHIILGGVKIPYE--KGLEAHSDGDVVLHALADAILGAAAALGDIGKHF 62
                                                                                                                                                                                                                                                                                                                         QAAQLDHHPVGRQLGVAADALDLLEVVGHLAAGGQHAGIVGGQAVLALEAFALLHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                LA--DAILGAAALGDIGKHFPDTDPNFKGADSRVLLRHVYGIVKEKGYK-LVNADVTIIA 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                          Application US/09252991A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Application US/09252991A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10.0%; Score 81; DB 4
30.9%; Pred. No. 0.26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        34; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 4; Length 493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 560;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         --VTLG--GGHV 229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          23;
                                                                                                                      TO PSEUDOMONAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  رب
--
```

```
US-09-206-942-71
                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-252-991A-32082
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ర్జర
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-252-991A-32625
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-252-991A-32082
GENERAL INFORMATION:
APPLICANT: LOOSMORE, Shee:
APPLICANT: Yang, Yan-Ping
                                                               Sequence 71, Application US/09206942
Patent No. 6432669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
APPLICANT: Marc J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 32082
ENGTH: 708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR FILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 6
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 32625
LENGTH: 562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 32082, Application US/09252991A Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: PRT
ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: PRT ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity
                                                                                                                                                                                            320
                                                                                                                                                                                                                                                                              266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        354 LDQRRIHVEHRQPAVAAEHAVLLE 377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               302
                                                                                                                                                                                                                                                                                                                     71 GADSRVLLRHVYGIVK-EKGYKLVNADVTIIAQ-APKMLPHVPG--MRANIAADLETDVD 126
                                                                                                                                                                                                                                                                                                                                                                                                         21 LGGVKI----PYEKGLE--AHSDGDVVL---HALADAILGAAALGD-IGKHFPDTDPNFK 70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 74 SRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVP-GMRANIAADLETDVDFINVKA 132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       16 GDHIILGGVKIPY--EKGLEAHSDGDVVLHALADAILGAAALGDIGKHFPDTDPNFKGAD 73
                                                                                                                                                                                                                                                                                                                                                                                                                                                    42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ω
5
                                                                                                                                                                                            LLVL-----LEGSLGADHGLGVQRVAALDR 344
                                                                                                                                                                                                                                   FINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                              ABD--FLLEHAHAVVPLEQG----RLDVVAAGQVAPELLDAAAGEQLGAFLLGDVEVGED
                                                                                                                                                                                                                                                                                                                                                                VGRVQVVAVGPHATGLDPAAHAVGAVDVAGPEAGAEAVLGVVGDGQGLGFVLEGGDSDHR 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTTEKLGFEGRKEGIAVQAVVLIE 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ---ELQHVFRQFLQQRQALLEÄGAEV-----QFTAHRPLGDRGDLLADAGGLGQFVDDFR 353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GEHVVDPQLRLQLTGEIGEAAGQDGGLVTQALEFGEQGFRTLGQ--
                    Loosmore, Sheena M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9.7%; Score 78; D
27.8%; Pred. No. 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9.7%; Score 78.5; DB
24.3%; Pred. No. 0.64;
ative 25; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                    25; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60/094,190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 4; Length 708;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   63;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 562;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ----TQRGAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
```

```
Ś
US-09-252-991A-20039
                                                                                              片
                                                                                                                                     S
                                                                                                                                                                                   ğ
                                                                                                                                                                                                                                                                           B
                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 9
US-09-252-991A-18149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ફ
                          RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-252-991A-18149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; ORGANISM: Haemophilus influenzae US-09-206-942-71
                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity 24.7:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 18149
LENGTH: 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
APPLICANT: Marc J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 71
LENGTH: 1477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 18149, Ap
Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS FILE REFERENCE: 107196.136
CURRENT FILING DATE: 1999-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR PILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR PILING DATE: 1998-07-27
PRIOR FILING DATE: 1998-07-27
PRIOR ETLING DATE: 1998-07-27
PRIOR ETLING DATE: 1998-07-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Klein, Michel H.
TITLE OF INVENTION: Protective Recombinant Haemophilus Influenzae High
TITLE OF INVENTION: Wolecular Weight Proteins
FILE REFERENCE: 1038-861 MIS:jb
CURRENT APPLICATION NUMBER: US/09/206,942
CURRENT FILING DATE: 1998-12-08
EARLIER APPLICATION NUMBER: 09/167,568
EARLIER APPLICATION NUMBER: 09/167,568
EARLIER FILING DATE: 1998-10-07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NUMBER OF SEQ ID NOS: 95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: PRT
                                                                                                                                        115 ANIAADLE-TDVDFINVKATTTE-----KLGFEGRKEGI---AVQAVVLIER 157
                                                                                                                                                                                      103
                                                                                            152 DFVARDHQVVDRDLLQVQQABQHVMPVDLAGLGVVGRMQGLFVAAASAVVLFRR 205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              435 TKEWLLDPDDVTIEAEDP 452
                                                                                                                                                                                                                                                                             46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         87 EKGYKLVNADVTIIAQAP 104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 29 EKGLEAHSDGDVVLHALADAILGAAALGDIGK--HFPDTDPNFKGADSRVLLRHVYGIVK 86
                                                                                                                                                                                                                                                                                                                         ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  29;
                                                                                                                                                                                                                               LGDIGKHFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKKLPHVPGMR 114
                                                                                                                                                                                                                                                                           DVLQRDDADHL---AIFVDHHADTALLLLEVHQLGRQRRAFRHEIRLHAGLAEILLGQAA 102
                                                                                                                                                                                                                                                                                                                       DVHRFNDGDHIILGGVKIPYEKG-----LEAHSDG-----DVVLHA-LADAILGAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EKGGRAIVWGDI---ALIDGNINAQGSGDIAKTGGFVETSGHYLSIDSN----
                                                                                                                                                                                      LGQQARDLAHVHDPFDLVDVVAVDRQA-GVA--GGAQLLDDDLEFVVEVDAF--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Application US/09252991A
                                                                                                                                                                                                                                                                                                                                                                                           9.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9.6%;
37.2%;
                                                                                                                                                                                                                                                                                                                                                                     25; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7;
                                                                                                                                                                                                                                                                                                                                                                                           Score 75.5; DB Pred. No. 0.36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 77; DB 4; Length 1477; Pred. No. 4.2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                 DB 4;
                                                                                                                                                                                                                                                                                                                                                                       67;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30;
                                                                                                                                                                                                                                                                                                                                                                                                                 Length 220;
                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                       39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ---AIVK 434
                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PSEUDOMONAS
                                                                                                                                                                                                                                                                                                                            5
4
                                                                                                                                                                                        151
```

Sequence 20039, Application Patent No. 6551795

US/09252991A

GENERAL INFORMATION:

```
Ś
                                            仔
                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 11
US-09-252-991A-23689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밝
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-20039
                                                                                                                                                                                                                                                                                                           PRIOR FILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 23689
LENGTH: 898
TYPE: PRT
ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Marc J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 23689, Application US/09252991A
Patent No. 6551795
                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 199-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR ETIJING DATE: 1998-07-27
NUMBER: OF SEQ ID NOS: 33142
                                                                                                                                                                                                                                                                                                09-252-991A-23689
                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/09/252,991A CURRENT FILING DATE: 1999-02-18 PRIOR APPLICATION NUMBER: US 60/074,788 PRIOR FILING DATE: 1998-02-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPBUTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ) ID NO 20039
ENGTH: 400
                                                                                                                                                                                                                             Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
                                                                                                                            568 VGPGDEARVVMQNRNNDPRRAVGRRGHHAAAAGVLLVHRQGVEVDPVEHAESIAQAGLRP 627
                                            628 LAQLAVERRRAAPDLQSAGHDALVAAAGLDAILHHLPDTQQAGAGFLGGAPGLLV-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    174 PLAADLAVGTVGQ-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                    45 LA--
                                                                                                                                                                                                              44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          48 AILGAAALGDIGKHFPDTDPNFKGADSRVLLRHVYGIVK---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      44;
                                                                                                                                                                      4 VGMGYDV-----HRPND-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAH-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DGIGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ERMVDMVVASLVAQRPFEFGAIHGGTAHV-GPLQLDVHAIPGHFDATGIQFGAFGRSGVE 280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VDVGVDGEAHA----GQHPLLG-----QHLLALQAHRFRQTQPGLDAARLAGGAVVVEDTLD
      IVKEKGYKLVNADV---TIIAQAPKMLPHVPGMRA-----NIAADLETDVDFINVK 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EGIAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -----TIIAQAPKMLPHVPGMRANIAADLETDVDFI--NVKATTTE--KLGFEGRK 144
                                                                                                                                                                                                            9.1%; Score 73.5; Di
ilarity 22.7%; Pred. No. 5.3;
Conservative 22; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    107196.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Rubenfield et al.
NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9.4%; Score 75.5; DB 23.8%; Pred. No. 0.89;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ------DRRVLQRDVDLVVETVRHPALDLFATGTALVHRDM 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               27; Mismatches
                                                                                      DAILGAAALGDIGKHFPDTD---PNFKGADSRVLLRHVYG
                                                                                                                                                                      -GDHIILGGVKIPYEKGLE----AHSDGDVVLHA
                                                                                                                                                                                                                                                      DB 4;
                                                                                                                                                                                                              67;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      57.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4.
                                                                                                                                                                                                                                                    Length 898;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 400;
                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ----SDGDVVLHALAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ----ERGYKLVNADV
                                                                                                                                                                                                              61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      57
                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                              682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    173
                                                                                    83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              47
                                                                                                                                                                                                                œ
```

```
Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          よ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                     ORGANISM: Staphylococcus epidermidis US-09-134-001C-3855
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               맗
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-134-001C-3855
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-252-991A-20237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-252-991A-20237
Query Match
Best Local Similarity 21...
Thes 28; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRIOR FILING DATE: 1998-02-18
ERIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 20237
                                                                                                                                                             SEQ ID NO 3855
LENGTH: 608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best
                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 3855, Ag
Patent No. 638037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Patent No.
                                                                                                                                                                                             APPLICANT: Lynn Doucette-Stamm et al
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO STAPHYLOCOCCUS
TITLE OF INVENTION: DETERMIDIS FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: GTC-007
CURRENT APPLICATION NUMBER: US/09/134,001C
CURRENT FILING DATE: 1998-08-13
PRIOR APPLICATION NUMBER: US 60/064,964
PRIOR FILING DATE: 1997-11-08
PRIOR FILING DATE: 1997-08-14
NUMBER OF SEQ ID NOS: 5674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION NUMBER: US 60/074,788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CURRENT APPLICATION NUMBER: US/09/252,991A CURRENT FILING DATE: 1999-02-18
                                                                                                                                            TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ENGTH: 1388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Focal
Total
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             132 ATTTEKLGFEGRKE 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      20237, Application US/09252991A
). 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              44 ---ALADAILGAAALGDIGKHFPDTDFNFKGADSRVLLRHVYGIVKEKGYKLVNADVTII 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           17 DHIILGGVKIPYEKGL------EAHS-DGDVVLH--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9.1%;
1 Similarity 24.2%;
36; Conservation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HQAPVEGLHIAAAPG-RAGVEADLAEAVE 409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QAGLLAAAGLASAMLAEVGEGVARV------AQPLRRRVEGVA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AQAPKMLPHV---PGMRANIAADLETDVD 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEDAFGGRRVAVHRGIFLLHVBALQLAGVLEVADHHALDGDPLVHQRTFGAGALHLVDRS 332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AADLQAGGVEGTED 752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----LGHQLADRQAFADAMVEQLPRGLEGERQRRAVLDDAVEAGGLVVDHETAAHRVVLA 738
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Application US/091340010
                    9.1%; 5cc
21.7%; Pre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1999-02-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  20; Mismatches
                            Score 73; DB Pred. No. 3.4; 2; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 73.5;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10;
                                                                   DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  42
                              33; Indels
                                                                   Length 608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 1388;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GIAVAVADVGLA 381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    51;
                              46;
                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               43
                                9
```

Query Best Match	RESULT US-09-2 Seque Pacen Pacen GENER TITL TITL TITL TITL TITL TITL TITL TIT	99 8	p &	B 8	Query Best Match	RESULT US-09-2 ; Seque ; Seque ; paten ; GENER ; APPL APPL ; PILE ; CURR ; CURR ; CURR ; CURR ; CURR ; LEN ; SOFT ; SEQ I LEN ; TYP ; ORG	9G VQ	Db Qy	40 40
Query Match 9.0%; Score 72.5; DB 4; Length Best Local Similarity 23.2%; Pred. No. 1.1; Matches 35; Conservative 21; Mismatches 44; Indel	ULT 15 09-252-991A-28466 09-252-991A-28466 atent No. 6551795 ENERAL INFORMATION: MICHEIC ACID AND AMINO ACID SEQ TITLE OF INVENTION: MUCLEIC ACID AND AMINO ACID SEQ TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND FILE REFERENCE: 107196-136 CURRENT APPLICATION NUMBER: US/09/252,991A CURRENT FILING DATE: 1999-02-18 PRIOR APPLICATION NUMBER: US 60/074,788 PRIOR APPLICATION NUMBER: US 60/074,788 PRIOR APPLICATION NUMBER: US 60/074,788 PRIOR APPLICATION NUMBER: US 60/094,190 PRIOR FILING DATE: 1998-07-27 NUMBER OF SEQ ID NOS: 33142 ELNGTH: 267 TYPE: PRT ORGANISM: Pseudomonas aeruginosa 09-252-991A-28466	y 118 AADLETDVDFINV 130 	Y 58 IGKHFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNAÐVTIIAQAPKMLPHVPGMRANI 	y 3 RVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGD	Query Match 9.1%; Score 73; DB 4; Length 1002 Best Local Similarity 24.8%; Pred. No. 7.3; Matches 33; Conservative 16; Mismatches 46; Indels	SULT 14 -09-268-347-24 Sequence 24, Application US/09268347 Sequence 24, Application US/09268347 Sequence 27, Application US/09268347 SERERAL INFORMATION: APPLICANT: LOOSMOTE, Sheena M. TITLE OF INVENTION: RECOMBINANT HAEMOPHILUS INFLUENZAE FILE REFERICE: 1038-660 CURRENT APPLICATION NUMBER: US/09/268,347 CURRENT FILING DATE: 1999-03-16 NUMBER OF SEQ 1D NOS: 54 SOFTWARE: PATENTIN Ver. 2.0 SEQ ID NO 24 SOFTWARE: PATENTIN Ver. 2.0 SEQ ID NO 24 LENGTH: 1002 TYPE: PRT ORGANISM: Haemophilus influenzae	99 IIAQAPKMI 107 :: : b 485 VVRENEKII 493	57 DIGKHEPDTDPNEKGADSRVLLR :: : 432 NVEKSYTDLDDSIFEARVKEEKERFDHLIMMRGTE	18 HIILGGVKIPYEKGLEAHSDGDVVLH : : : :
h 267; ls 51;	UENCES RELATING		APKMLPHVI	HALADAILO : : YVLRDELTO	1002; ls 38;	ADHESIN PE		HVYGIVKEKGYKLVNADVT : : : ::: : } NAYKLHRELG-EIMTANVT	ALADAILGAAALG-: : SLLSAIYGGTVAGPR
Gaps	3			1 0	Gaps	PROTEINS		-	
co	PSEUDOMONAS		117 577	57 546	o.			98 484	56 431

Search completed: January 29, 2004, 15:57:06 Job time : 5.92742 secs

```
Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OM protein - protein search, using sw model
      Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                   360.5
251
247.5
213.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        seq length: 0
seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Published Applications AA:*

1: /cgn2 6/prodata/1/pubpaa/PCT_NEW_PUB.pep:*

2: /cgn2 6/prodata/1/pubpaa/PCT_NEW_PUB.pep:*

3: /cgn2 6/prodata/1/pubpaa/US06_NEW_PUB.pep:*

4: /cgn2 6/prodata/1/pubpaa/US06_PUBCOMB.pep:*

5: /cgn2 6/prodata/1/pubpaa/US06_PUBCOMB.pep:*

6: /cgn2 6/prodata/1/pubpaa/US08_NEW_PUB.pep:*

7: /cgn2 6/prodata/1/pubpaa/US08_NEW_PUB.pep:*

9: /cgn2 6/prodata/1/pubpaa/US09A_PUBCOMB.pep:*

9: /cgn2 6/prodata/1/pubpaa/US09B_PUBCOMB.pep:*

10: /cgn2 6/prodata/1/pubpaa/US09E_PUBCOMB.pep:*

11: /cgn2 6/prodata/1/pubpaa/US09E_PUBCOMB.pep:*

13: /cgn2 6/prodata/1/pubpaa/US09E_PUBCOMB.pep:*

14: /cgn2 6/prodata/1/pubpaa/US10A_PUBCOMB.pep:*

15: /cgn2 6/prodata/1/pubpaa/US10B_PUBCOMB.pep:*

16: /cgn2 6/prodata/1/pubpaa/US10B_PUBCOMB.pep:*

17: /cgn2 6/prodata/1/pubpaa/US10B_PUBCOMB.pep:*

16: /cgn2 6/prodata/1/pubpaa/US10B_PUBCOMB.pep:*

17: /cgn2 6/prodata/1/pubpaa/US10B_PUBCOMB.pep:*

18: /cgn2 6/prodata/1/pubpaa/US10B_PUB.pep:*
                                                                                                                                                                                                                                                                                                             Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-941-947A-14
806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            January 29, 2004, 15:54:19; Search time 10.7171 Seconds (without alignments) 3044.503 Million cell updates/sec
                                                                                                                                                                                                                 100.0
                                                                                                                                                                                                                                                     100.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    789580 seqs, 207824079 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MIRVGMGYDVHRFNDGDHII...
                                        31.1
30.7
26.5
19.0
19.0
17.7
17.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Copyright
                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GenCore version 5.1.6 (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                 먮
US-09-934-903-10
US-09-934-868-66
US-09-941-947A-14
US-10-174-410-12
US-10-156-761-11502
US-10-128-713A-10
US-10-128-713A-10
US-10-128-713A-10
US-09-738-626-6421
US-10-174-410-135
US-10-174-410-129
US-10-174-410-133
US-10-174-410-133
US-10-174-410-136
US-10-174-410-136
US-10-174-410-136
US-10-174-410-136
US-10-174-410-136
                                                                                                                                                                                                                                                                                                                 H
                                                                                                                                                                                                                                                                                                                                                                      SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ....LGFEGRKEGIAVQAVVLIER
                                                                                                                                                                                                                                                                                                           Description
                                                       Sequence
Sequence
Sequence
                                                                                                              Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                    Sequence
                                        Sequence
  10, Appl
14, Appl
14, Appl
12, Appl
162, Appl
1150, Appl
11502, Appl
11502, Appl
135, Appl
135, Appl
135, Appl
134, Appl
134, Appl
135, Appl
136, Appl
137, Appl
138, Appl
139, Appl
139, Appl
```

# 4	44	43	42	41	40	بئ 9	بي 60	37	ω 6	(J)	3 4	LJ LJ	3 2	31	30	29	28	27	25	25	24	23	22	21	20	9	99 HJ	17	16	
106	106	106	106	108	109	109	109	110	112	112	114	114	114	114	115	115	115	116	116	119	123	123	124	124	125	126	126	127	133	
•	13.2	•	•		•	•		•		•	•	•								•										
23 23	32	32	32	32	32	32	32	32	32	32	32	32	32	32	3	32	32	32	32	32	32	32	32	32	32	32	32	32	32	
5	5	15	15	15	15	5	15	15	15	5	5	51	5	5	15	15	5	15	5	15	25	15	15	15	15	15	ķ	ķ	15	
-10-174-410-17	US-10-174-410-155	-10-174-410-14	0-174-410-12	-10-174-410-18	-10-174-410-23	-10-174-410-22	-10-174-410-15	-10-174-410-12	-10-174-410-23	-10-174-410-15	-10-174-410-15	-10-174-410-14	-10-174-410-14	-10-174-410-13	-10-174-410-15	-10-174-410-13	-10-174-410-13	-174-410-15	-10-174-410-13	-10-174-410-14	-10-174-410-12	-10-174-410-12	-10-174-410-14	4-410-12	-10-174-410-12	-10-174-410-15	-10-174-410-12	-10-174-410-13	US-10-174-410-125	
equence 173,	Sequence 155, App	equence 146,	equence 126,	equence 189,	equence 230,	equence 229,	e 158,	equence 123,	equence 233,	equence 151,	equence 156,	e 143,	142,	139,	154,	138,	130,	'n	132,	148,	124,	121,	140,	122,	128,	equence 150,	equence 127,	e 131,	equence 125,	

ALIGNMENTS

```
밁
Q
                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-934-903-10
                                                                                                                                                                                                                                  US-09-934-903-10
                                                                                                                                                                                                                                                                                                                                         TITLE OF INVENTION: Genes Involved in Isoprenoid Compounds Production FILE REFERENCE: CL1646 US NA CURRENT APPLICATION NUMBER: US/09/934,903 CURRENT FILING DATE: 2001-08-22 PRIOR APPLICATION NUMBER: 60/229,907 PRIOR FILING DATE: September 1, 2001 NUMBER OF SEQ ID NOS: 24 SOPTWARE: Microsoft Office 97 SEQ ID NO 10

LENGTH: 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 1
Patent No.
                                                                                                                                  Query Match
Best Local Similarity
Matches 157; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Koffas, Mattheos
APPLICANT: Odom, J. Martin
APPLICANT: Schenzle, Andreas J.
APPLICANT: No. US20020102690Alton, Kelley C.
APPLICANT: Tomb, Jean-Francois
APPLICANT: Rouviere, Pleare
APPLICANT: Rouviere, Pleare
APPLICANT: Picataggio, Stephen
                                                                                                                                                                                                                                                     TYPE: PRT
ORGANISM: Methylomonas 16a
FEATURE:
OTHER INFORMATION: Amino acid sequences encoded by ORF5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10, Application US/09934903
o. US20020102690A1
  61
                                                                       MIRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK
HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD 120
                                              MIRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Picataggio, Stephen
Cheng, Qiong
                                                                                                                                  100.0%; Score 806; DB 10; ilarity 100.0%; Pred. No. 3.5e-81; Conservative 0; Mismatches 0;
                                                                                                                                       Indels · 0; Gaps
                                                                                                                                                                                   Length 157;
                                                                                             60
                                                 0
                                                                                                                                            0;
```

```
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-941-947A-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-934-868-66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Schenzle, Andreas J
TITLE OF INVENTION: DENTIFIFYING MSTHANOTROPHIC BACTERIAL STRAIN
FILE REFERENCE: CL1596 US WA
CURRENT APPLICATION NUMBER: US/09/934,868
CURRENT FILING DATE: 2001-08-22
PRIOR APPLICATION NUMBER: 60/229,858
PRIOR FILING DATE: 2000-09-01
NUMBER OF SEQ ID NOS: 81
SOFTWARE: Microsoft Office 97
SEQ ID NO 66
SOFTWARE: Mi
SEQ ID NO 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 14, Application US/09941947A Publication No. US20030003528A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 66, Application U
Patent No. US20020137190A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                    CURRENT APPLICATION NUMBER: US/09/941,947A
CURRENT FILING DATE: 2001-09-01
PRIOR APPLICATION NUMBER: 60/229,907
PRIOR FILING DATE: 2000-09-01
PRIOR APPLICATION NUMBER: 60/229,858
PRIOR APPLICATION NUMBER: 60/229,858
PRIOR FILING DATE: 2000-09-01
NUMBER OF SEQ ID NOS: 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OTHER INFORMATION: Amino acid sequences encoded by ISPF -09-934-868-66
                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Picataggio, Steve
APPLICANT: Rouviere, Pierre E.
TITLE OF INVENTION: CAROTENOID PRODUCTION FROM A SINGLE CARBON SOURCE
FILE REFERENCE: CL1903 US NA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Brzostowicz,
APPLICANT: Cheng, Qion
APPLICANT: DiCosimo, D
APPLICANT: Koffas, Mati
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Koffas, Mattheos
APPLICANT: Odom, James M
APPLICANT: Schenzle, Andre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: PRT
ORGANISM: Methylomonas 16a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH: 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     157;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61 HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAFKMLPHVPGMRANIAAD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                      Microsoft Office 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MIRVGMGYDVHRFNDGDHTILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MIRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LETDVDFINVKATTTEKLGFEGRXEGIAVQAVVLIER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Koffas, Mattheos
Miller, Edward S. Jr.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Cheng, Qiong
DiCosimo, Deana J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Odom, J. Martin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%; illarity 100.0%; Conservative Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Patricia C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US/09934868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 806; DB 10;
Pred. No. 3.5e-81;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  157;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
```

```
RESULT 5
US-10-259-194A-162
                                                                                                                               Ś
                                                                                                                                                                               몱
                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                    Ŗ
                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; TYPE: PRT
; ORGANISM: Methylomonas 16a
US-09-941-947A-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          덩
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     덩
                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-174-410-12
                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: FastSEQ for Windows Version SEQ ID NO 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 12, Appublication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches 157;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CURRENT APPLICATION NUMBER: US/10/174,410
CURRENT FILING DATE: 2002-06-17
PRIOR APPLICATION NUMBER: 60/299,058
PRIOR FILING DATE: 2001-06-18
NUMBER OF SEQ ID NOS: 336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Louie, Gordon V.
APPLICANT: Buchanan, Sean Grant
APPLICANT: Geliwala, Ketan S.
APPLICANT: Geliwala, Ketan S.
APPLICANT: Sauder, J. Michael
TITLE OF INVENTION: CRYSTALS AND STRUCTURES OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME/KEY: VARIANT
LOCATION: 1, 69, 108, 115
CTHER INFORMATION: Xaa = Selenomethionine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT CRGANISM: Haemophilus influenzae FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGTH: 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ENGTH: 170
                                                                                                                                                                                                                                                                                                                                                                                 Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local
                                                                                                                               121 LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121 LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                          123 LQCDIEQVNVLATTTEKLGFTGDQEGIACEAVALLIR 159
                                                                                                                                                                               63 LFPDTDXQYKNADSRGLLREAFDQVQEKGYKIGNVDITITAQAPLXRPHIDAXRAKIAED
                                                                                                                                                                                                                     61 HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD
                                                                                                                                                                                                                                                                                                                                                            97;
                                                                                                                                                                                                                                                                                                          1 MIRVGMGYDVHRENDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK 60
                                                                                                                                                                                                                                                                    3 LIRIGHGFDVHAFGEDRPLIIGGVEVPYHTGPIAHSDGDVALHALTDAILGAAALGDIGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 MIRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK 60
                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MIRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LETDVDFINVKATTTEKLGFBGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Application US/10174410
                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100.0%;
ilarity 100.0%;
Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US20030073134A1
                                                                                                                                                                                                                                                                                                                                                          61.5%; Score 496; DB 15; 61.8%; Pred. No. 7.7e-47; ative 21; Mismatches 39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 806; DB 11; Pred. No. 3.5e-81; 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ٥,
                                                                                                                                                                                                                                                                                                                                                                                                    Length 170;
                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 157;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                              ô
                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
                                                                                                                                                                                                                                                                         62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                                                                                                              0
```

Sequence 162, Applic Publication No. US20 GENERAL INFORMATION

Application US/10259194A o. US20040010815A1

APPLICANT: Lange, Markus B.

```
CURRENT APPLICATION NUMBER: US/10/259,194A
CURRENT FILING DATE: 2003-01-07
PRIOR APPLICATION NUMBER: US 60/325,277
PRIOR PILING DATE: 2001-09-26
PRIOR APPLICATION NUMBER: US 60/370,743
PRIOR PILING DATE: 2002-04-04
PRIOR APPLICATION NUMBER: US 60/370,620
PRIOR APPLICATION NUMBER: US 60/370,620
PRIOR FILING DATE: 2002-04-04
NUMBER OF SEQ ID NOS: 662
SOFTWARE: PATENTLIST.DI VERSION 3.0.4 (C) 200
SEQ ID NO 162
LENGTH: 223
ORGANISM: Streptomyces avermitilis US-10-156-761-11502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; LENGTH: 223
; TYPE: PRT
; ORGANISK: Oryza sativa
US-10-259-194A-162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-156-761-11502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ₽
                                                           SEQ ID NO 11502
LENGTH: 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 11502, Application US/10156761 Publication No. US20030119018A1
                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local S
                                                                                                 CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR FILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
                                                                                                                                                                                                                                                   APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SAKAKI, YOSHIYUKI
APPLICANT: HATTORI, MASAHIRA
TITLE OF INVENTION: WOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: OMURA, SATOSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILE REFERENCE: 70029-NP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                          TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PPLICANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        187 GADPSVVNLKAKTHEKVDSLGENRSIAAHTVVLLMR 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           73;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3 RVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKHF 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PD-TDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RVGHGFDLHRLEPGLPLIIGGIDIPHDRGCDAHSDGDVLLHCVVDAILGALGLPDIGQIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PELPDPRWKGADSSVFMREAVKLMHEAGYELGNLDATLILQKPKISPFKETIRSNLCDLL 186
                                                                                                                                                                                                                                                                                                                                                  IKEDA, HARUO
ISHIKAWA, JUN
HORIKAWA, HIROSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Moughamer, Todd
Provart, Nicholas
Ricke, Darrell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Kreps, Joel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Goff, Stephen A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Glazebrook, Jane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ghassemian, Majid
Briggs, Steven P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Katagiri,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Tong
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bret
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IDENTIFICATION AND CHARACTERIZATION OF PLANT GENES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Fumiyaki
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           44.7%; Score 360.5; DB 1
46.8%; Pred. No. 1.1e-31;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2001 Syngenta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         55
7:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       <u>ب</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          126
```

```
RESULT 8
US-09-738-626-6421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; ORGANISM: Rhodococcus erythropolis US-10-128-713A-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 7
US-10-128-713A-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                문
                                                                                                  APPLICANT: HAYASHI, MIKIRO
APPLICANT: CCHLAI, KEIKO
APPLICANT: CCHLAI, KEIKO
APPLICANT: TATEISHI, NAOKO
APPLICANT: SENOH, AKTHIRO
APPLICANT: SENOH, AKTHIRO
APPLICANT: OZAKI, AKTO
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CUERENT APPLICATION NUMBER: US/10/128,713A
CURRENT FILING DATE: 2002-04-22
NUMBER OF SEQ ID NOS: 36
SOFTWARE: Microsoft Office 97
SEQ ID NO 10
                                                                                                                                                                                                                                                                                                                                                                  Sequence 6421, Application US/09738626
Publication No. US20020197605A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 10, Applica Publication No. US20 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
FILE REFERENCE: 249-125
CURRENT APPLICATION NUMBER: US/09/738,626
CURRENT FILING DATE: 2000-12-18
PRIOR APPLICATION NUMBER: JP 99/377484
PRIOR FILING DATE: 1999-12-16
                                                                                                                                                                                                                                                                                                                           APPLICANT: NAKAGAWA, SATOSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Bramucci, Michael G
TITLE OF INVENTION: Genes Involved in Isoprenoid Compound Production
FILS REFERENCE: CL-1788
                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   116 LSDILGAPVSVSÄTTTDGLGLTGRGEGIAAMATALV 151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122 ETDV--DFINVKATTIEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               123 TDV--DFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      136 SDAVGAPVSVSGATTDGLGFPGRDEGLMAVATALVVR 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 MRVGLGTDVHPIEVGRPCWMAGLLFEEADGCSGHSDGDVAVHALCDALLSAAGLGDLGSV 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2 IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4 VGMGYDVHRENDGDHIILGGVKIPYB-KGLEAHSDGDVVLHALADAILGAAALGDIGKHF 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                In 31.1%; similarity 37.6%; 59; Conservative 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FGTGRPEWDGVSGARMLAEVRRLLEENQFTVGNAAVQVIGNRPKI-----GPRRDEAQKV 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GTGRPEWSGASGVTLLTEAARIVRAAGFTIGNVAVQVVGPRPKI-----GKRRDEAQKIL 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PDTDPNPKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADLE 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VGIGTDIHAFEDGRELWCAGLKWEGEGPGLAGHSDADVVAHAACNALFSAAGLGDLGQHF 80
                                                                                                                                                                                                                                                                                                 MIZOGUCHI,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Application US/10128713A
No. US20030170847A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                 SEIKO
                                                                                                                                                                                                                                                                                                      HIROSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                30.7%; Score 247.5; DB 1
37.8%; Pred. No. 2.2e-19;
tive 24; Mismatches 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 251; DB 15; Length 174; Pred. No. 1e-19; Indels 67; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 158;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
```

```
RESULT 10
US-10-289-762-585
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 9
US-10-174-410-135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM: Corynebacterium glutamicum US-09-738-626-6421
                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-174-410-135
                                                                                                                         Sequence 585, Applic
Publication No. US20
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 135, Applic Publication No. US20 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NUMBER OF SEQ ID NOS: 7059
SOFTWARE: PatentIn ver. 3.
SEQ ID NO 6421
                                                                                                                                                                                                                                                                                                                                                                       Matches 28; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE: FastSEQ for Windows Version SEQ ID NO 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
      APPLICANT: Griffais, R. TITLE OF INVENTION: Chlamydia pneumoniae genomic sequence and polypeptides, fragments TITLE OF INVENTION: thereof and uses thereof, in particular for the diagnosis, preve TITLE OF INVENTION: and treatment of infection FILE REFERENCE: 9710-003-999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT APPLICATION NUMBER: US/10/174,410
CURRENT FILING DATE: 2002-66-17
PRIOR APPLICATION NUMBER: 60/299,058
PRIOR FILING DATE: 2001-66-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Buchanan, Sean Grant
APPLICANT: Gajiwala, Ketan S.
APPLICANT: Sauder, J. Michael
TITLE OF INVENTION: CRYSTALS AND STRUCTURES OF
TITLE OF INVENTION: 2C-METHLY-D-ERYTHRITOL, 2.
TITLE OF INVENTION: 2C-METHLY-D-ERYTHRITOL, 2.
TITLE REFERENCE: 524982000300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Louie, Gordon V.
APPLICANT: Buchanan, Sean (
APPLICANT: Gajiwala, Ketan APPLICANT: Sauder, J. Mich
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUMBER: JP 00/159162
PRIOR FILING DATE: 2000-04-07
PRIOR APPLICATION NUMBER: JP 00/280988
PRIOR FILING DATE: 2000-08-03
CURRENT APPLICATION NUMBER: US/10/289,762
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQ ID NOS: 336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: PRT
ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH: 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ENGTH: 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 123 SEIIGAPCSLSATTIDHMGFTGRSEGRASVATAVV 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 63
                                                                                                                                                                                                                                                                                                                      40 VVLHALADAILGAAALGDIGKHFPDTDPNFKG 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     68 GVGRPEYDGVSGTQLLKEVRELLSAHGYVIGNVAAQLVGQTPKF-----GPRREEAQQVI 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3 RVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKHF 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             51; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RVGIATDAHQIBAGKPCWIACLLFEGVDGCEGHSDGDVVAHAIVDALLSASGIGDIGSFV 67
                                                                                                                                                                                                                                                                                VLLHALSDALLGAAALGDIGKHFPDTDPRFKG 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TDV--DFINVKATTTEKLGFBGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADLE 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Application US/10174410
                                                                                                                                                                       Application US/10289762
                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                  US20040006218A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US20030073134A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    26.5%; Score 213.5; DB 10; 32.9%; Pred. No. 1.3e-15;
                                                                                                                                                                                                                                                                                                                                                                                         19.0%;
87.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             25;
                                                                                                                                                                                                                                                                                                                                                                                       Score 153; DB 19
Pred. No. 7e-10;
                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1.3e-15;
                                                                                                                                                                                                                                                                                                                                                                                                              DB 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2,4-CYCLODIPHOSPHATE SYNTHASE MECPS
                                                                                                                                                                                                                                                                                                                                                                                                            Length 32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 160;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             7;
                                                                                                                                                                                                                                                                                                                                                                    .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                    0
```

```
RESULT 11
US-10-174-410-129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  충
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; TYPE: PRT ; ORGANISM: Chlamydia pneumoniae US-10-289-762-585
                                                                                                                                                                                                                                                         RESULT 12
US-10-174-410-133
                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; ORGANISM: C. :
US-10-174-410-129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ŗ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                            Sequence 133, Applic Publication No. US20 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQ ID NOS: 336
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 129
LENGTH: 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Guery Match

Best Local Similarity 23...
47; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CURRENT FILING DATE:
NUMBER OF SEQ ID NOS:
SEQ ID NO 585
LENGTH: 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 129, A Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                    APPLICANT: Buchanan, Sean Grant
APPLICANT: Gajiwala, Ketan S.
APPLICANT: Sauder, J. Michael
TITLB OP INVENTION: CRYSTALS AND STRUCTURES OF
TITLB OP INVENTION: 2C-METHLY-D-ERYTHRITOL, 2,
FILE REFERENCE: 524982000300
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Buchanan, Sean Grant
APPLICANT: Gajiwala, Ketan S.
APPLICANT: Gajiwala, Ketan S.
APPLICANT: Sauder, J. Michael
TITLE OF INVENTION: CRYSTALS AND STRUCTURES OF
TITLE OF INVENTION: 2C-METHLY-D-ERYTHRITOL, 2,4-CYCLODIPHOSPHATE SYNTHASE MECPS
FILE REFERENCE: 52498200300
CURRENT APPLICATION NUMBER: US/10/174,410
CURRENT FILING DATE: 2002-06-17
PRIOR APPLICATION NUMBER: 60/299,058
PRIOR FILING DATE: 2001-06-18
CURRENT APPLICATION NUMBER: US/10/174,410 CURRENT FILING DATE: 2002-06-17 PRIOR APPLICATION NUMBER: 60/299,058
                                                                                                                                                                             APPLICANT: Louie,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Louie, Gordon V.
APPLICANT: Buchanan, Sean
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          116 NIAADLETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  100 KVADELLQT----RGITDSGIYLEBALKSLK-PNQKISHVAITIEGSRPKFLCKLSALRQ 154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      155 NIAQVMNLTPTDIGITATSGEGLSDFGCGDGVQCFCVLTV 194
                                                                                                                                                                                                                                                                                                                                       17.7%;
1 Similarity 78.1%;
25; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        57 DIGKHFPDTDPNFKG-ADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRA 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              40 RTGIGQDSHRFLPBSSTKPCILGGIIFDHCPGFQARSDGDIIFHAICNAISSVTNKIILG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RVGMGYDVHRF---NDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAA---ALG 56
                                                                                                                                                                                                                   Application US/10174410 o. US20030073134A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Application US/10174410 o. US20030073134A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  perfringens
                                                                                                                                                        Gordon V.
nan, Sean Grant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            6849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2003-03-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19.0%; Score 153; DB 12; 29.4%; Pred. No. 8.5e-09; tive 26; Mismatches 75;
                                                                                                                                                                                                                                                                                                                                                                                                                   Score 143; DB 15;
Pred. No. 8.9e-09;
5; Mismatches 2;
                                                                                                                                                                                                                                                                                                                                         32
                                                                                2,4-CYCLODIPHOSPHATE SYNTHASE MECPS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              75; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 199;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 32;
                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            £2;
                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                     0
```

```
CURRENT APPLICATION NUMBER: US/10/174,410
CURRENT FILING DATE: 2002-06-17
PRIOR APPLICATION NUMBER: 60/299,058
PRIOR FILING DATE: 2001-06-18
NUMBER OF SEQ ID NOS: 336
SOFTMARE: FastSEQ for Windows Version 4.0
SEQ ID NO 136
LENGTH: 32
                                                                                                                                                                                                                                                                                                                                                                                               RESULT 14
US-10-174-410-136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ₽,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-174-410-134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Louie, Gordon V.

APPLICANT: Buchanan, Sean Grant
APPLICANT: Gajiwala, Ketan S.

APPLICANT: Sauder, J. Michael
TITLE OF INVENTION: CRYSTALS AND STRUCTURES OF
FILE REFERENCE: 52498200300
CURRENT APPLICATION NUMBER: US/10/174,410
CURRENT FILLIG DATE: 2002-06-17
CURRENT FILLIG DATE: 2002-06-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 13
US-10-174-410-134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                멂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-174-410-133
                                                                                                                                                                                                                                                        APPLICANT: Louie, G
APPLICANT: Buchana
APPLICANT: Gajiwal
APPLICANT: Sauder,
                                                                                                                                                                                                                                                                                                                                  Sequence 136, Applic Publication No. US20 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQ ID NOS: 336
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 134, A Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR FILING DATE: 2001-06-18
NUMBER OF SEQ ID NOS: 336
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                       APPLICANT: Buchanan, Sean Grant
APPLICANT: Gajiwala, Ketan S.
APPLICANT: Sauder, J. Michael
TITLE OF INVENTION: CRYSTALS AND STRUCTURES OF
TITLE OF INVENTION: CRYSTALS AND STRUCTURES OF
TITLE OF INVENTION: 2C-METHLY-D-ERYTHRITOL, 2,4-CYCLODIPHOSPHATE SYNTHASE MECPS
FILE REFERENCE: 524982000300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR APPLICATION NUMBER: 60/299,058 PRIOR FILING DATE: 2001-06-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: PRT
ORGANISM: S. typhimurium
ORGANISM: Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM: S. enterica
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      al Similarity 84.4%;
27; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                40 VVLHALADAILGAAALGDIGKHFPDTDPNFKG 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   40 VVLHALADAILGAAALGDIGKHFPDTDPNFKG 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         l Similarity
27; Conservat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 VALHALTDALLGAAALGDIGKLFPDTDPAFKG 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VALHALTDALLGAAALGDIGKLFPDTDPAFKG 32
                                                                                                                                                                                                                                                                                                                                                       Application US/10174410 o. US20030073134A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Application US/10174410 o. US20030073134A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                          Gordon V.
nan, Sean Grant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          17.1%;
84.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 138; DB 15; Length 32;
Pred. No. 3.2e-08;
1; Mismatches 4; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 138; DB 15;
Pred. No. 3.2e-08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2,4-CYCLODIPHOSPHATE SYNTHASE MECPS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          <u>.,</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
```

```
; SOFTWARE: FastSEQ for Windows Version 4.0; SEQ ID NO 149; LENGTH: 32; TYPE: PRT; ORGANISM: Becherichia coli US-10-174-410-149
Search completed: January 29, 2004, 16:21:17 Job time: 10.7171 secs
                                                                            밁
                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 15
US-10-174-410-149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-174-410-136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local S
Matches 27
                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 149, Application US/10174410 Publication No. US20030073134A1 GENERAL INFORMATION:
                                                                                                                                                                     Query Match
Best Local Similarity 84.4%;
                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION NUMBER: 60/299,058
PRIOR FILING DATE: 2001-06-18
NUMBER OF SEQ ID NOS: 336
                                                                                                                                                                                                                                                                                                                                                                                               FILE REFERENCE: 524982000300
CURRENT APPLICATION NUMBER: US/10/174,410
CURRENT FILING DATE: 2002-06-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Louie, Gordon V.
APPLICANT: Buchanan, Sean Grant
APPLICANT: Gajiwala, Ketan S.
APPLICANT: Gajiwala, Ketan S.
APPLICANT: Sauder, J. Michael
TITLE OF INVENTION: CRYSTALS AND STRUCTURES OF
TITLE OF INVENTION: 2C-METHLY-D-ERYTHRITOL, 2.
                                                                                              40 VVLHALADAILGAAALGDIGKHFPDTDPNFKG 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     40 VVLHALADAILGAAALGDIGKHFPDTDPNFKG 71
                                                                                                                                                       27:
                                                                            1 VALHALTDALLGAAALGDIGKLFFDTDFAFKG 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 VALHALTDALLGAAALGDIGKLFPDTDPAFKG 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       27,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       17.1%; Score 138; DB 15; 84.4%; Pred. No. 3.2e-08;
                                                                                                                                                     Score 138; DB 15;
Pred. No. 3.2e-08;
1; Mismatches 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                            2,4-CYCLODIPHOSPHATE SYNTHASE MECPS
                                                                                                                                                                                         Length 32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 32;
                                                                                                                                                       Indels
                                                                                                                                                     ç.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0
                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
```

Result No. Run Post-processing: Minimum Match Maximum Match Listing first Minimum DB Maximum DB Title: Perfect score: Database Total number of hits satisfying chosen parameters: Scoring table: Sequence: OM protein - protein search, using sw model Searched: 8 Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution. seq length: 0 seq length: 2000000000 Match January 29, 2004, 15:44:49; Search time 4.61946 Seconds (without alignments) 3268.453 Million cell updates/sec PIR_76:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:* Query 283308 segs, 96168682 residues Gapop 10.0 , BLOSUM62 US-09-941-947A-14 MIRVGMGYDVHRFNDGDHII.. GenCore version Copyright (c) 1993 - 2004 Length B Gapext 0.5 100% 45 summaries 80 DA833194
AH004018
AH804008
AH859083
AH859083
AH859083
AH859084
AH910856
AH91086
A ä SUMMARIES 5.1.6 Compugen Ltd. .LGFEGRKEGIAVQAVVLIER 157 hypothetical prote conserved hypothet conserved hypothet B. subtilis YacN p B. subtilis YacN p hypothetical prote gltX 5'-region con hypothetical prote ygbB/yacN family p hypothetical prote hypothetical prote 2-C-methyl-D-eryth conserved hypothet conserved hypothet
2C-methyl-D-erythr
2C-methyl-D-erythr
2C-methyl-D-erythr
2C-methyl-D-erythr
2C-methyl-D-erythr unknown protein, 3 ispd/ispf bifuncti ISPD/ISPF bifuncti hypothetical prote hypothetical prote hypothetical prote 2-C-methyl-D-eryth conserved hypothet Description

ALIGNMENTS

_						-1																
Db 121 GVAVDQVNVKATTTERLGFTGREBGIAVHAVALL 154	QY 122 ETDVDPINVKATTTBKLGFBGRKBGIAVQAVVLI 155	Db 61 FPDTDPRFKGADSRALLRHVVALVAEKGWKVGNVDATIVAQAPKWAPHIETWRGLIAEDL	QY 62 FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKKLPHVPGMRANIAADL 121	Db 1 MRIGHGYDVHRPGEGDFITLGGVRIPHKHGEVAHSDGDVLLHALSDALLGAAALGDIGKH	Qy 2 IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH	Hest Local Similarity 71.4%; Pred. No. 5e-46; Hest Local Similarity	Chiery Match 71 3%. Score 575. DR 2. Length 157.	A;Gene: PA3627 C;Superfamily: 2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase	A;Experimental source: strain PAO1 C;Genetics:	A;Cross-references: GB:AE004782; GB:AE004091; NID:g9949772; PIDN:AAG07015.1; GSPDB:GN001:	A; Molecule type: DNA A; Residues: 1-157 <sto></sto>	A;Status: preliminary	A;Accession: A83194	A, Title: Complete genome sequence of Pseudomonas aeruginosa PAGI, an opportunistic patho; A. Teference number: 182067. MITTD:20417137. BMITD:10840643	Nature 406, 959-964, 2000	adman, S.; Yuan, Y.; Brody, L.E.; Courter, S.N.; Folger, K.K.; Kas,	R;Stover, C.K.; Pham, X.Q.; Erwin, A.L.; Mizoguchi, S.D.; Warrener, P.; Hickey, M.J.; Bri	C;Accession: A83194	C;becles: Feeucomonas aeruginosa C;bate: 15-Sep-2000 #sequence revision 15-Sep-2000 #text change 09-Dec-2002	conserved hypothetical protein PA3627 [imported] - Pseudomonas aeruginosa (strain	A83194	
		APKMAPHIETMRGLIAEDL 120	DAPKKLPHVPGMRANIAADL 121	LHALSDALIGAAALGDIGKH 60	LHALADAILGAAALGDIGKH 61	Indels 0; Gaps 0;	angth 157:	hate synthase		9772; PIDN:AAG07015.1; GSPDB:GN001:			•	inosa PAG1, an opportunistic pathog 43		r, K.K.; Kas, A.; Larbig, K.; Lim,	D.; Warrener, P.; Hickey, M.J.; Bri	1	xt change 09-Dec-2002	udomonas aeruginosa (strain PAO1)		

conserved hypothetical protein VC0529 [imported] - Vibrio cholerae (strain N16961 seros C,Species: Vibrio cholerae
C,Species: Vibrio cholerae
C,Date: 1B: Aug-2000 #sequence_revision 20-Aug-2000 #text_change 09-Dec-2002
C,Accession: D82311
R,Heidelberg, J.F.; Eisen, J.A.; Nelson, W.C.; Clayton, R.A.; Gwinn, M.L.; Dodson, R.J. chardson, D.; Ermolaeva, M.D.; Vamathevan, J.; Bass, S.; Qin, H.; Dragoi, I.; Sellers, C.R.; Mekalanos, J.J.; Venter, J.C.; Fraser, C.M.
Nature 406, 477-483, 2000
A,Title: DNA Sequence of both chromosomes of the cholera pathogen Vibrio cholerae.
A,Reference number: A82035; MUID:20406833; PMID:10952301
A;Accession: D82311

R.J.;

serogro

```
2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase C,Species: Escherichia coli C,Date: 07-Jun-1996 #sequence_revision 07-Jun-1996 #t C,Accession: I55083, F65055 R;Li, C.; Ichikawa, J.K.; Ravetto, J.J.; Kuo, H.C.; FJ. Bacteriol. 176, 6015-6022, 1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Title: Genome sequence of Yersinia pestis, the causative agent of plague. A;Reference number: AB0001; MUID:21470413; PMID:11586360
A;Recession: AB0408
A;Status: preliminary
A;Status: preliminary
A;Molecule type: DNA
A;Molecule type: DNA
A;Residues: 1-162 <KUR>
A;Cross-references: GB:AL590842; PIDN:CAC92590.1; PID:g15981287; GSPDB:GN00C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Gene: ispF
C; Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Nature 413, 523-527, 2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R;Parkhill, J.; Wren, B.W.; Thomson, N.R.; Titball, R.W.; Holden, M.T.G.; Prentice, M.E deno-Tarraga, A.M.; Chillingworth, T.; Cronin, A.; Davies, R.M.; Davis, P.; Dougan, G.; il, M.; Rutherford, K.; Simmonde, M.; Skelton, J.; Stevens, K.; Whitehead, S.; Barrell,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2C-methyl-D-erythritol 2.4-cyclodiphosphate synthase [imported] - Yersinia | C;Species: Yersinia pessis C;Date: 02-Nov-2001 #sequence_revision 02-Nov-2001 #text_change 09-Dec-2002 C;Accession: AB0408
                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                        Ď.
                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Map position:
C; Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Status: preliminary
A;Molecule type: DNA
A;Residus: 1-158 <HEI>
A;Cross-references: GB:AE004139;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Cross-references: GB:AE004139; GB:AE003852; NID:g9654953; A;Experimental source: serogroup Ol; strain N16961; biotype
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AB0408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ď.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VC0529
                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   107;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   111;
                                                                                                                                                                                                                                                                                                        5
                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                             <u>بــو</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                     N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                     DLQCHMDDINVKATTTEQLGFTGRGEGIACEAVVLL
                                                                                                                                                                                                                                                             DIETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                        KLFPDTDPAFKGADSRGLLRBAYRRILAKGYKLGNLDITIIAQAPKMAPHIPQMRVNLAE
                                                                                                                                                                                                                                                                                                                                               KHFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKWLPHVPGWRANIAA 119
                                                                                                                                                                                                                                                                                                                                                                                           MRIGHGFDVHKFGENGSGPLIIGGVRIPYEKGLLAHSDGDVALHAATDALLGAAALGDIG
                                                                                                                                                                                                                                                                                                                                                                                                                              IRVGMGYDVHRF--NDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LETDLGNINVKATTTEKLGFTGRKEGIACEAVVLLRK 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKWLPHVPGWRANIAAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MIRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         HFPDTDDKWKGADSRELLKDVYRRVKAQGYVLGNADVTIIAQAPKNAPYIQAMCAAIAED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MIRIGHGFDVHRFGGEGPIIIGGVKIPYEQGLIAHSDGDVALHALSDALLGAIAAGDIGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2C-methyl-D-erythritol 2,4-cyclodiphosphate synthas:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2C-methyl-D-erythritol
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            67.2%; Score 542; DB 68.6%; Pred. No. 5.9e tive 17; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      68.7%;
70.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PIDN:CAC92590.1; PID:g15981287; GSPDB:GN00175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 554; DB 2;
Pred. No. 4.5e-44;
6; Mismatches 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2,4-cyclodiphosphate synthase
                       Kuo, H.C.; Fu,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; DB 2; Length 162;
5.9e-43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   30;
                                                                                                                                                                                                                     156
                                                                #text_change 09-Dec-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 158
                                                                                                            (similarity) -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                       J.C.; Clarke,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PIDN:AAF93697.1; GSPDB:GN00:
El Tor

    Yersinia pestis

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                <u>ب</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ٥,
                                                                                                            Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                        120
                                                                                                                                                                                                                                                                                                                                                                                             60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                         coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (stra
                                                                                                              ŝ
  Ş
```

```
A;Gene:
C;Superf
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    맑
                                    Ś
                                                                                밁
                                                                                                              Ś
                                                                                                                                                                                                                                                                                                     A;Cross-references: GB:AE005174; NID:g12517200; PIDN:AAG57853.1; GSPDB:GN00145; UWGP:Z4(A;Experimental source: strain O157:H7, substrain EDL933
                                                                                                                                                                                                                                                                                                                                                                                                           A;Reference number: A85480;
A;Accession: A85924
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 멼
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Cross-references: GB:AE000358; GB:U00096; NID:g2367156; A;Experimental source: strain K-12, substrain MG1655 C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Residues: 1159 <RES>
A;Cross-refevences: GB:L07442; NID:g1036737; PIDN:AAA79837.1; EA;Cross-refevences: GB:L07442; NID:g1036737; PIDN:AAA79837.1; EA;Blattner, F.R.; Plunkett III, G.; Bloch, C.A.; Perna, N.T.; EA; Rose, D.J.; Mau, B.; Shao, Y.
Science 277, 1453-1462, 1997
A;Title: The complete genome sequence of Bscherichia coli K-12.
A;Reference number: A64720; MUID:97426617; PMID:9278503
A;Accession: F65955
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Title: A new gene involved in stationary-phase survival located at 59 minutes A;Reference number: I55083; MUID:95014035; EMID:7928962 A;Accession: I55083 A;Status: preliminary; translated from GB/EMBL/DDBJ A;Status: preliminary; translated from GB/EMBL/DDBJ A;Molecule type: DNA A;Molecule type: DNA A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Title: Genome sequence of enterohemorrhagic Escherichia coli 0157:H7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A85924
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Gene: ygbB
C;Superfamily: 2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase
                                                                                                                                                                                                                                                                                                                                                 A;Molecule type: DNA
A;Residues: 1-159 <STO>
                                                                                                                                                                                                                                                                                                                                                                                        A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Molecule type: DNA
A;Residues: 1-159 <BLAT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Status: preliminary; nucleic acid sequence not shown; translation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
Matches 107
                                                                                                                                                                                                                                               Superfamily:
                                                                                                                                                                                                     Query Match
                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                  ygbB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 107;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           122
  13
                                         62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          62
                                                                                                                       N
                                                                                  1 MRIGHGFDVHAFGGEGPIIIGGVRIPYEKGLLAHSDGDVALHALTDALLGAAALGDIGKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N
                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
  FPDTDPAFKGADSRELLREAWRRIQAKGYTEGNVDVTIIAQAPKWLPHIPQMRVFIAEDL
                       FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKKLPHVPGKRANIAADL 121
                                                                                                              IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCHMDDVNVKATTTEKLGFTGRGEGIACEAVALL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PPDTDPNEKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MRIGHGFDVHAFGGEGPIIIGGVRIPYEKGLLAHSDGDVALHALTDALLGAAALGDIGKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IRVGWGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FPDTDPAFKGADSRELLREAWRRIQAKGYTLGNVDVTIIAQAPKWLPHIPQMRVFIAEDL
                                                                                                                                                                                                                                             2C-methyl-D-erythritol 2,4-cyclodiphosphate synthass
                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     69.5%;
                                                                                                                                                                                66.6%; Score 537; DB 2; Length 159; 69.5%; Pred. No. 1.7e-42;
                                                                                                                                                                                                                                                                                                                                                                                                                               MUID:21074935;
                                                                                                                                                                14; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 14; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 537; DB 2;
Pred. No. 1.7e-42;
                                                                                                                                                                                                                                                                                                                                                                                                                                 PMID:11206551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PIDN:AAC75788.1; PID:g1789103;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PID:g433711
Burland, V.; Riley, M.;
                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               not
                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
  120
                                                                                  60
                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            D.J.,
                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Apodaca,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mayhew
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    the E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (st
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Х
```

STDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155

,

```
A;Molecule type: DNA
A;Residues: 1-159 <HAY>
A;Cross-references: GB:BA000007; PIDN:BAB37023.1; PID:gl3363071; GSPDB:GN00154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Nature 413, 848-852, 2001
Nature 413, 848-852, 2001
Nature 413, 848-852, 2001
A; Authors: Parry, C.; Quail, M.; Rutherford, K.; Simmonds, M.;
A; Title: Complete genome sequence of a multiple drug resistant
A; Title: Complete genome sequence of a PMID: 11677608
                    망
                                         5
                                                                                                                                                                                                                                                                                                                        A;Title: Complete genome sequence of enterohemorrhagic Escherichia coli O157:H7 A;Reference number: A99629; MUID:21156231; PMID:11258796
                                                                                                                                                                                                                                                                                                                                                              gasawara, N.; Yasunaga,
DNA Res. 8, 11-22, 2001
                                                                                                                                                                                                                                                                                                                                                                                                                           2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase [similarity] - Escherichia C;Species: Escherichia coli C;Patci: 18-Jul-2001 #sequence_revision 18-Jul-2001 #text_change 09-Dec-2002
                                                                                                                                                                                                                                                                                                         A; Reference number: A99629; A; Accession: H91078
                                                                                                                                                                                                                                                                                                                                                                                               R;Hayashi,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     문. 왕
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    R;Parkhill, J.; Dougan, G.; Jam th. T.; Connerton, P.; Cronin,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2C-methyi-D-erythritol 2,4-cyclodiphosphate synthase [imported] - Salmonella C;Species: Salmonella enterica subsp. enterica serovar Typhi A;Note: this species has also been called Salmonella typhi C;Date: 09-Nov-2001 #sequence_revision 09-Nov-2001 #text_change 09-Dec-2002 C;Accession: AD0856
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Status: preliminary A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local S
Matches 107
                                                                                                                                                              :Superfamily:
                                                                                                                                                                                                                                                                                      Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                    Accession: H91078
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Residues: 1-159 < PAR >
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Cross-references: GB:AL513382; PIDN:CAD06035.1; PID:g16504002; GSPDB:GN00176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               T.; Connerton, r.; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BqbA
                                                                                                                                                                               ECs3600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                       il Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   107;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MRIGHGFDVHAFGGEGPIIIGGVRIPYEKGLLAHSDGDVALHALTDALLGAAALGDIGKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ŋ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                         IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FPDTDPAFKGADSRELLREAWRRIQAKGYTLGNVDVTIIAQAPKMLPHIPQMRVPIAEDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCHMDDVNVKATTTEKLGFTGRGEGIACEAVALL 154
                                                                                                                                                                                                                                                                                                                                                                              Makino, K.; Ohnishi, M.;
Kasunaga, T.; Kuhara, S.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase
                                                                                                                                                            2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             66.6%; Scilarity 69.5%; Pr
Conservative 14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   G.; James, K.D.; Teronin, A.; Davis,
                                                                                                     69.58;
                                                                                                      Score 537; DB 2;
Pred. No. 1.7e-42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 537; DB 2;
Pred. No. 1.7e-42;
4; Mismatches 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           K.D.; Thomson,
                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                              Kurokawa, K.; Ishii, K.; Yokoyama, Shiba, T.; Hattori, M.; Shinagawa,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ٠
:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      son, N.R.; Pickard,
Davies, R.M.; Dowd,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 33,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Skelton, J.;
Salmonella e
                                                                                                                                                                                                                                                                                                                                                                            Shinagawa,

    Salmonella

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      D.; Wain, J.; Cl
, L.; White, N.;
                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                     Gaps
                 60
                                                 61
                                                                                                                                                                                                                                                                                                                                                                              Ξ.
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Stevens,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   enterica
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Churcher
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   coli
                                                                                                                                                                                                                                                                                                                                             and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Farrar,
                                                                                                                                                                                                                                                                                                                                         gen
                                                                                                                                                                                                                                                                                                                                                                                               ი
ი
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ed
(set
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ×
A; Molecule type: DNA
A; Residues: 1-158 < K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   片
                                  A;Status: nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
```

```
Cispecies: Bacillus subtilis
Cispecies: Accillus subtilis
Cispecies: Marches subtilis

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gltX 5'-region conserved hypothetical protein yacN - Bacillus subtilis
C;Species: Bacillus subtilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C;Date: 18-Aug-1995 #sequence_revision 18-Aug-1995 #text_change 09-Dec-2002 C;Accession: F64156
C;Accession: F64156
R;Fleischann, R.D.; Adams, M.D.; White, O.; Clayton, R.A.; Kirkness, B.F.; Kerlavage, Gocayne, J.D.; Scott, J.; Shirley, R.; Liu, L.I.; Glodek, A.; Kelley, J.M.; Weidman, D.M.; Brandon, R.C.; Fine, L.D.; Fritchman, J.L.; Fuhrmann, J.L.; Geoghagen, N.S.M. Science 269, 496-512, 1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Cross-references: GB:U32750; GB:L42023; NID:g1573668; PIDN:AAC22331.1; PID:g1573672; A;Note: best homolog was a hypothetical proteinfrom Escherichia coli C;Superfamily: 2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Authors: Gnehm, C.L.; McDonald, L.A.; Small, K.V.; Fraser, C.M.; Smith, H.O.; Venter, A;Title: Whole-genome random sequencing and assembly of Haemophilus influenzae Rd. A;Reference number: A64000; MUID:95350630; PMID:7542800
A;Accession: F64156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: DNA
A; Residues: 1-158 < TIGR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                hypothetical protein HI0671 - Haemophilus influenzae (strain C;Species: Haemophilus influenzae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Status: nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                103;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MIRVGMGYDVHRENDGDHIILGGVKIPYBKGLBAHSDGDVVLHALADAILGAAALGDIGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   h 66.3%; Score 534; DB 2; Similarity 65.6%; Pred. No. 3.2e-42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LFPDTDMQYKNADSRGLLREAFRQVQBKGYKIGNVDITIIAQAPKMRPHIDAMRAKIAED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HEPDTDPNEKGADSRVILLRHVYGIVKEKGYKLVNADVTI IAQAPKMIPHVPGMRANIAAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MIRIGHGFDVHAFGEDRPLIIGGVEVPYHTGFIAHSDGDVALHALTDAILGAAALGDIGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCHMDDVNVKATTTEKLGFTGRGEGIACEAVALL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LOCDIEQVNVKATTTEKLGFTGRQEGIACEAVALLIR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LETDVDFINVKATTTBKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    acid sequence not shown; translation not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Rd KW20)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
```

acid sequence not shown; translation not shown

```
먑
                                     Ś
                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                           R;Takami, H.; Nakasone, K.; Takaki, Y.; Maeno, G.; Sasaki, R.; Masul, N.; Fuji, F.; Nucleic Acids Res. 28, 4317-4331, 2000
A;Title: Complete genome sequence of the alkaliphilic bacterium Bacillus halodurans A;Reference number: A33650; MUID:20512582; PMID:11058132
A;Recession: DB3663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C;Date: 01-Dec-zovo
C;Accession: D83663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Reference number: A53402; MUID:94171772;
A;Accession: A53402
A;Molecule type: DNA
A;Residues: 137-158 <GAG>
A;Cross-references: GB:L14580
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                         A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           hypothetical protein BH0108 [imported] - Bacillus halodurans (strain C-125) C;{\sf Species:} Bacillus halodurans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       D83663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     $
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Gene: yacN
C;Superfamily: 2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Title: Systematic sequencing of the 180 kilobase region A;Reference number: S65967; MUID:96051385; PMID:7584024 A;Accession: S66120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Cross-references: GB:Z99104; GB:AL009126; NID:g2632267; PIDN:CAB11867.1; PID:g2632358
A;Experimental source: strain 168
R;Ogasawara, N.; Nakai c. v---::
                                                                                                                                                                                                                                                                                                                                                    A; Residues: 1-157 <STO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: EMBL:D26185; NID:g467326; PIDN:BAA05325.1; PID:g467479
A;Noce: the nucleotide sequence was submitted to the EMBL Data Library, December R;Gagnon, Y; Breton, R.; Putzer, H.; Pelchat, M.; Grunberg-Manago, M.; Lapointe, J._Biol. Chem. 269, 7473-7482, 1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Molecule type: DNA
A;Residues: 1-158 <OGA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Title: Clustering and co-transcription of the Bacillus subtilis genes encoding the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DNA Res. 1, 1-14, 1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local S
Matches 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Date: 01-Dec-2000 #sequence_revision 01-Dec-2000 #text_change 09-Dec-2002
                                                                                                                                                                                     Query Match
Best Local :
                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Status: nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ;Experimental source: strain 168
;Ogasawara, N.; Nakai, S.; Yoshikawa,
                                                                                                                                                                                                                                                                                           Genetics:
                                                                                                                                                                                                                                                                                                             Cross-references: GB:AP001507; GB:BA000004; NID:g10172612; PIDN:BAB03827.1; GSPDB:GN00Experimental source: strain C-125
                                                                                                                                                                                                                                                                        9010HE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                 103;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        103;
    61
                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MIRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK 60
                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD 120
                            HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD 120
                                                                                                               MIRVGMGYDVHRFNDGDHIILGGVXIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LEADVSQVNVKATTTEKLGFTGRAEGIAAQATVLIQK 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HEPOTOPEFXDADSFKLLQHVWGIVKQKGYVLGNIDCTIIAQKPKMLPYIEDWKKKIAEG
                                                                                MIRVGQGFDVHQFAEGRILIIGGVEIPYEKGLLGHSDADVLLHTIADAALGAIGEGDIGK
  HEPDTDPHFKDADSAKLLSAVWELVKEKGYTLGNVDCTTIAQKPKMAPHIPAMRARIAEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MFRIGQGFDVHQLVEGRPLIIGGIEIPYEKGLLGHSDADVLLHTVADACLGAVGEGDIGK
                                                                                                                                                                                                                                                2C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     acid sequence not shown; translation not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     66.3%; Score 534; DB 2; Length 158; 65.6%; Pred. No. 3.2e-42;
                                                                                                                                                                                     64.5%; Score 520; 66.5%; Pred. No. 6.
                                                                                                                                                               16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     18; Mismatches
                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PMID:7510287
                                                                                                                                                                                     DB 2; Length 157; .2e-41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     36;
                                                                                                                                                                 ω
ω
                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of the Bacillus
                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    subtilis
    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                                                                60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1993
, Л.
                                                                                                                                                                                                                                                                                                                                                                                                                                                      and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    chro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hira
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           am
S
                                         ₽
                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       á
                                                                                                                                                                                                                                              A;Cross-references:
                                                                                                                                                                                                                                                                                                                            A; Accession: S70845
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Status: preliminary
                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Marches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                             Tocal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4
    HFPDTDPNFKGADSRVLLRHVYGIVKBKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD
```

```
A;BEddus. PILLENDA
A;Molecule type: DNA
A;Residues: 1-160 <TET>
A;Cross-references: GB:AE002501; GB:AE002098; NID:g7226755; PIDN:AAF41868.1; PID:g722675
                                                                                                                                                                                   A;Note: the nucleotide sequence was summitted to the problem of a synthase C;Superfamily: 2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase
                                                                                                                                                                                                                                                                   A;Status: preliminary; nucleic acid sequence not shown; translation A;Molecule type: DNA A;Residues: 1-160 <PAL>
                                                                                                                                                                                                                                                                                                                                                                   R.Palmer, K.L., Munson Jr., R.S.
Mol. Microbiol. 18, 821-830, 1995
Mol. Microbiol. 18, 821-830, 1995
A;Title: Cloning and characterization of the genes encoding the haemolysin of Haemophilu A;Reference number: S70843; MUID:96422469; PMID:8825086
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        hypothetical protein 1 - Haemophilus ducreyi C;Species: Haemophilus ducreyi C;Species: Haemophilus ducreyi C;Darte: 12-Feb-1998 #sequence_revision 20-Feb-1998 #text_change 09-Dec-2002 C;Accession: S70845
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             YgbB/YacN family protein NMB1512 [imported] - Neisseria meningitidis (strain MC58 serogr C;Species: Neisseria meningitidis (C;Date: 31-Mar-2000 #sequence_revision 31-Mar-2000 #text_change 09-Dec-2002 C;Accession: G81073 R;Tettelin, H.; Saunders, N.J.; Heidelberg, J.; Jeffries, A.C.; Nelson, K.E.; Eisen, J.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A,Gene: NMB1512
C,Superfamily: 2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Reference number: A81000; MUID:20175755; PMID:10710307
A;Accession: G81073
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Reference number: A81000. WITH 2012Fer Park Transpiridle serogroup B strain MC58
                                                                                                                                                                                                                references: EMBL:U32175; NID:g1151070; PIDN:AAC43539.1; PID:g1151073
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              124 GIDISCVNIKGKTNEKLGYLGRMEGIEAQAAVLLVR 159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              122 ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2 IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH 61
                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                          MIRVGMGYDVHRENDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LETDVDFINVKATTTEKLGFBGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FPDTAAEFKDADSRVELRAAYQSVQAQGWQAVNVDTTVIAQKPKLAPHIPQWRANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FPDTDPNFKGADSRVELRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62.7%;
60.9%;
                                                                                          62.4%; Score 503; DB 2; 63.1%; Pred. No. 2.4e-39; tive 17; Mismatches 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       21; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 505; DB 2;
Pred. No. 1.5e-39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       40;
                                                                                                                                          Length 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ٥.
                                                                                                                                                                                                                                                                                                                           not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          , K.B.; Eisen, o
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Dougherty,
Pizza, M.
                                                                                                                                                                                                                           July
60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63
                                                                                                                                                                                                                           1995
                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     R.; Ve
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A G
```

```
A;Cross-references: GB:AE003962; GB:AE003849; NID:g9106270; PIDN:AAF84103.1; GSPDB:GN001
A;Experimental source: strain 9a5c
R;Simpson, A.J.G.; Reinach, F.C.; Arruda, P.; Abreu, F.A.; Acencio, M.; Alvarenga, R.; A
Briones, M.R.S.; Bueno, M.R.P.; Camargo, A.A.; Camargo, L.E.A.; Carraro, D.M.; Carrer, H
as-Neto, E.; Docena, C.; El-Dorry, H.; Facincani, A.P.; Ferreira, A.J.S.
submitted to GenBank, June 2000
A;Authors: Ferreira, V.C.A.; Ferro, J.A.; Fraga, J.S.; Franca, S.C.; Franco, M.C.; Frohm
J.D.; Junqueira, M.L.; Kemper, E.L.; Kitajima, J.P.; Krieger, J.B.; Kuramae, E.B.; Laigu
Chado, M.A.; Madeira, M.S. M. Madeira, H.M.F.; Marino, C.L.; Marques, M.V.; Martins, H
A;Authors: Martins, E.M.F.; Matebuna, A.Y.; Menck, C.F.M.; Miracca, E.C.; Miyaki, C.Y.;
P.G.; Nunes, L.R.; Oliveira, M.A.; de Oliveira, M.C.; de Oliveira, R.C.; Palmieri, D.,
Rodrigues, V.; Rosa, A.J. de M.; de Rosa Jr., V.E.; de Sa, R.G.; Santelli, R.V.; Sawasak
                                                                                                                                                                                                                                                                                                                                                           Conserved hypothetical protein XF1294 [imported] - Xylella fastidiosa (strain 9a5c C;Species: Xylella fastidiosa C;Species: Xylella fastidiosa C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 09-Dec-2002 C;Accession: A82701 R;anonymous, The Xylella fastidiosa Consortium of the Organization for Nucleotide Nature 406, 151-157, 2000 A;Title: The genome sequence of the plant pathogen Xylella fastidiosa A;Reference number: A8251; MUID:20365717; PMID:10910347 A;Rote: for a complete list of authors see reference number A59328 below
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              conserved hypothetical protein NMA1712 [imported] - Neisseria meningitidis (s (Species: Neisseria meningitidis C;Species: Neisseria meningitidis C;late: 05-May-2000 #sequence_revision 05-May-2000 #text_change 09-Dec-2002 C;Accession: C81867 R;Parkhill, J; Achtman, M.; James, K.D.; Bentley, S.D.; Churcher, C.; Klee, Holroyd, S., Jagels, K.; Leather, S.; Moule, S.; Mungall, K.; Quail, M.A.; Nature 404, 502-506, 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     멼
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Gene: NMA1712
C;Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                믕
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          돲
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Cross-references: GB:AL162756; GB:AL157959; NID:g7380091; PIDN:CAB84940.1; A;Experimental source: serogroup A, strain Z2491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nature 404, 502-506, 2000
A;Title: Complete DNA sequence of a serogroup A strain of A;Reference number: A81775; MUID:20222556; PMID:10761919
A;Accession: C81867
                                                                                                                                                                                                                                                                           A;Accession: A82701
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-176 <SIM>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Residues:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ď,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                뮰
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    95;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1-160 <PAR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GIDISCVNIKGKTNEKLGYLGRMEGIESQAAVLLVR 159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LNCDIDQINIXATTTEXLGFTGRGEGIACEAVALLSK 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FPDTAAEFKDADSRVLLRAAYQSVQAQGWQAVNVDTTVIAQKFKLAFHIFQMRANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IRIGOGYDVHQLTEGRKLILGGVEIPFEKGLLGHSDADALLHAVTDALLGAAGLGDIGSH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LFPDTDQQYKNIDSRKLLIEAYRQVQTKGYQISNIDITIIAQADXXRPHIDMMRQLIAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 503; DB 2;
Pred. No. 2.4e-39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       [imported] - Neisseria meningitidis (strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 40;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 160;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Neisseria
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                menigitidis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S.R.; More!
Rajandream,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PID: 973803
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Z2491.
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequei
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Z2491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Gene:
C;Superf
                                                                                                                   Search completed: January 29, Job time: 5.61946 secs
                                                                                                                                                                                                        멂
                                                                                                                                                                                                                                     5
                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                   D
                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Molecule type: DNA
A; Residues: 1-157 < GLA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      혅
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AE1104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Lox
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; Jones, L.M.; Karst,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         subtilis YacM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FOC a L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1mo0236
                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              122
                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       84;
                                                                                                                                                                                                                                                                                                                                                                                     ш
                                                                                                                                                                                                                                                                                                                                                                                                                             ы
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
```

```
C;Species: Listeria monocycogene
C;Date: 27-Nov-2001 #sequence revision 27-Nov-
C;Accession: AEI104
R;Glaser, P.; Frangeul, L.; Buchrieser, C.; Am
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Authors: da Silva, A.C.R.; da Silva, F.R.; da Silva, A.M.; Silva Jr., W.A.; da Silveira
M.; Tsuhako, M.H.; Vallada, H.; Van Sluys, M.A.; Verjovski-Almeida, S.; Vettore, A.L.; Za
A;Reference number: A59328
A;Contents: annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Science 294, 849-852, 2001

A; Kuthors: Kreft, J.; Kuhn, M.; Kunst, F.; Kurapkat, G.; Madueno, B.; Maitournam, A.; Maok, C.; Schlueter, T.; Simoes, N.; Tierrez, A.; Vazquez-Boland, J.A.; Voss, H.; Wehland, A; Title: Comparative genomics of Listeria species.

A; Reference number: AB1077; MUID:21537279; PMID:11679669

A; Accession: AB1104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Cross-references: GB:NC_003210; PIDN:CAD00763.1; PID:g16409601; GSPDB:GN00177
A;Experimental source: strain EGD-e
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Gene: XP1294
C;Superfamily: 2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Species: Listeria monocytogenes
Date: 27-Nov-2001 #sequence_revision 27-Nov-2001 #text_change 09-Dec-2002
121 LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              62 FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL 121
                                                            FFPDTDMVFKDADSAELLAEIWOKVEADGFRLGNLDATIIAEKPKWAPYVEOMKLRIAEL 120
                                                                                                                            HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD 120
                                                                                                                                                                                        MIRIGQGYDVHKLAYDRDLIIGGVKIPYEKGLIGHSDADVLLHAITDAIIGAIGAGDIGH
                                                                                                                                                                                                                                 MIRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EVQPECVSVKATTSEGLGFIGRGEGLAAQVVVLLYR 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FPPSDVRWKGADSGVFVRHCHLLLRERDWCVGNVDATAICESPKIAPYVNAMREGIARLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VRIGQGYDVHAFGPGDHVMLGGVRVPHRCGVLAHSDGDVILHALCDAMLGALGLGDIGQH 74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                          2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein homolog lmo0236 [imported] - Listeria monocytogenes
                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  56.1%;
                                                                                                                                                                                                                                                                                                              56.0%; Score 451; DB 2; Length 157 58.6%; Pred. No. 1.5e-34; tive 19; Mismatches 46; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       31; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 452; DB 2; Length 176
Pred. No. 1.4e-34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Amend, A.; Baquero, F.; Berche, P.; d, L.; Dussurget, O.; Entian, K.D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                    0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ĉ,
                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                            60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                    0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Fsihi, H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EGD
```

2004,

15:55:32

157

Copyright

GenCore version (c) 1993 - 2004

5.1.6 Compugen Ltd. Ç

```
Minimum
Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Post-processing: Minimum Match 0%
Maximum Match 100
Listing first 45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              on:
        and is derived
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB DB
                                                                                                                                                                       446
443
429.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   seq
                                                                                                                                                                                                                                      length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              is the number of results predicted by chance to have a ater than or equal to the score of the result being printed, rived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 N
1 06
      127863 segs,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           January 29, 2004, 15:41:08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-941-947A-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SwissProt_41:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MIRVGMGYDVHRFNDGDHII......LGFEGRKEGIAVQAVVLIER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20000000000
      28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       47026705 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    100%
                                              ISPF_VIBVA
ISPF_VIBVA
ISPF_YERPE
ISPF_SALTY
ISPF_SALTY
ISPF_BACSU
ISPF_HAEIN
ISPF_HAEIN
ISPF_HAEIN
ISPF_RALSO
ISPF_RALSO
ISPF_XANCC
ISPF_XANCC
ISPF_TISNN

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ħ
                        ISDF_CAUCR
    ISPF_ANASI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; Search time 2.95645 Seconds (without alignments) 2497.314 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 127863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q9kuj1 vibrio chol
Q8dc59 vibrio valn
Q8dc59 vibrio para
Q8zbp7 versinia pe
Q8fej6 escherichia
P3663 escherichia
                      989ff7
29jfm4
47956
29jfm4
29jfm4
29jfm4
20jfm3
20j
                                                                                                                                                                                                                                                                                                                                                                                                                                             Q8z472
Q8zmf7
Q8zmf7
Q06756
P44815
P57954
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               P57708 pseudomonas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Description
                                                                                                                                                                                                                                                                                                                  6 bacillus su
5 haemophilus
4 pasteurella
7 bacillus ha
5 neisseria m
6 haemophilus
4 neisseria m
8 clostridium
8 clostridium
8 ralstonia s
y listeria in

8 thermozaner

3 r ispd/ispf

0 clostridium

0 r ispd/ispf

8 b ispd/ispf

9 r ispd/ispf

5 c ispd/ispf

5 c ispd/ispf

4 buchnera ap
                                                                                                                                                                                                                                                      7 xanthomonas
0 xanthomonas
5 xylella fas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          salmonella
bacillus su
                                                                                                                                                                                                             listeria mo
fusobacteri
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    salmonella
```

	,4	44	43	4 2	44	40	<u>ب</u> و	<u>ب</u> 8	<u>ب</u> 7	96	e E	w A.
	306.5	329	329.5	329.5	343	345	372	373	383	396	403	403
	38.0	40.8	40.9	40.9	42.6	42.8	46.2	46.3	47.5	49.1	50.0	50.0
	165	399	387	157	406	409	400	231	236	161	371	167
	-	_	Н	1	1	1	٢	μ	_	Н	μ.	_
ALIGNMENTS	ISPF_THEMA	ISDF_TREPA	ISDF_ZYMMO	ISPF_WIGBR	ISDF_HELPY	LATEH ADSI	ISDF AGRTS	ISPF_ARATH	ISPF_CATRO	ISPF SYNY3	ISDF_CAMJE	ISPF_BUCAP
	Q9wzb5 thermotoga	083525 t ispd/ispf	Q9rnz1 z ispd/ispf	Q8d224 wiggleswort		Q9zm19 h ispd/ispf		Q9cak8 arabidopsis	Q9m4w3 catharanthu		Q9pm68 c ispd/ispf	Q8k9d7 buchnera ap

LIGNMENT

```
RESULT 1
                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  opportunistic pathogen.";

Mature 406.959-964 (2000).

1- PUNCTION: CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL 2-PHOSPHATE INTO 2C-METHYL-D-ERYTHRITOL 2,4-CYCLODIPHOSPHATE AND COMPARTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL INTO 2C-METHYL-D-ERYTHRITOL 3,4-CYCLOPHOSPHATE AND CMP (BY SIMILARITY).

2C-METHYL-D-ERYTHRITOL 3,4-CYCLOPHOSPHATE AND CMP (BY SIMILARITY).

-[- CATALYTIC ACTIVITY: 2.-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol 2.4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.

STRAIN-ATCC 15692 / PAO1;

MEDLINB-20437337; PubMed=10984043;

MEDLINB-20437337; PubMed=10984043;

Stover C.K., Pham X.-Q.T., Erwin A.L., Mizoguchi S.D., Warrener P., Hickey M.J., Brinkman F.S.L., Hufnagle W.O., Kowalik D.J., Lagrou M. Garber R.L., Goltry L., Tolentino E., Westbrock-Wadman S., Yuan Y., Eardby L.L., Goltry L., Tolentino E., Kas A., Larbig K., Lim R.M., Erody L.L., Coulter S.N., Folger K.R., Kas A., Larbig K., Lim R.M., Enith K.A., Spencer D.H., Wong G.K.-S., Wu Z., Paulsen I.T., Feizer J., Saier M.H., Hancock R.E.W., Lory S., Olson M.V.;

"Complete genome sequence of Pseudomonas aeruginosa PAO1, an
                                                                                                                                                                                                                                                   EMBL; AE004782; AAG07015.1;
PIR; A83194; A83194.
HAMAP; MF_00107; -; 1.
InterPro; IPR003526; YgbB.
                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on it use by non-profit institutions as long as its content is in no was been by non-profit institutions as long as its content is in no was the content of 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ISPP PSEAB STANDARD; PRT; 157 AA.
P57776; Q9HY03;
16-OCT-2001 (Rel. 40, Created)
16-OCT-2001 (Rel. 40, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
2-C-metbyl-D-crythritol 2,4-cyclodiphosphate synthase (EC 4.6.1.12)
                                                                                                    Pfam: PP02542, YgbB; 1.
TICRRAMS; TICRO0151; ispF; 1.
FROSITE; PS01350; ISPF; 1.
Lyase; Isoprene biosynthesis;
                                                                                                                                                                                                                                                                                                                                                                                                                                        or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This SWISS-PROT entry is copyright. It is produced through a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pseudomonas aeruginosa.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CBI_TaxID=287;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            seudomonadaceae; Pseudomonas.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (MECPS) (MECDP-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; fifth step. SIMILARITY: BELONGS TO THE ISPF FAMILY.
                                                                     157 AA;
                                                                         16662 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gammaproteobacteria; Pseudomonadales;
Score 575;
                                                                     C39C377B6403BCBA CRC64;
   DB 1;
Length 157,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3
```

```
ISPF VIECH
ISPF VIECH
STANDARD, PRT; 158 AA.
AC (99KUJI;
DT 16-OCT-2001 (Rel. 40, Created)
DT 16-OCT-2001 (Rel. 41, Last sequence update)
DT 28-FEB-2003 (Rel. 41, Last amnotation update)
DE 26-Cmethyl-D-erythritol 2,4-cyclodiphosphate synt
DE 2-C-methyl-D-erythritol 2,4-cyclodiphosphate synt
DE 2-C-methyl-D-erythritol 2,4-cyclodiphosphate synt
DE 2-C-methyl-D-erythritol 2,4-cyclodiphosphate synt
DE (MECDP-Synthase).

GN 15PF OR WOOS29.

OS Vibrio cholerae.
OC Bacteria; Proteobacteria; Gammaproteobacteria; V.
OC Vibrio cholerae.
OC WEDLIME-20466833, PubMed-10952301;
RA Heidelberg J.F., Eisen J.A., Nalson W.C., Claytol
RA MCDL-TaxID-666;
RR MEDLIME-20466833, PubMed-10952301;
RA Heidelberg J.F., Hickey E.K., Peterson J.,
RA MCDOnald L., Utterback T., Fleischmann R.D., Nie,
RA MCDOnald L., Utterback T., Fleischmann R.D., Nie,
Salzberg S.L., Smith H.O., Colwell R.R., Mekalan,
RA Extroleva W.D., Vamathevan J., Bass S., Oin H., I
RA MCDOnald L., Utterback T., Fleischmann R.D., Nie,
Salzberg S.L., Smith H.O., Colwell R.R., Mekalan,
RA Extroleva W.D., Vamathevan J., Bass S., Oin H., I
RA MCDOnald L., Utterback T., Fleischmann R.D., Nie,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    맒
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
Pfam; Processing of the property of the process of 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Heidelberg J.F., Eisen J.A., Nelson W.C., Clayton R.A., Gwinn M.L., Dodson R.J., Haft D.H., Hickey E.K., Peterson J.D., Umayam L.A., Gill S.R., Nelson K.E., Read T.D., Tettelin H., Richardson D., Ermolaeva K.D., Vamathevan J., Bass S., Qin H., Dragoi I., Sellers P., McDonald L., Utterback T., Fleischmann R.D., Nierman W.C., White O., Salzberg S.L., Smith H.O., Colwell R.R., Mekalanos J.J., Venter J.C., Fraser C.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "DNA sequence of both chromosomes of the cholera pathogen Vibrio cholerae.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -!- PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; fifth step-!- SIMILARITY: BELONGS TO THE ISPF FAWILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2C-METHYL-D-ERYTHRITOL 3,4-CYCLOPHOSPHATE AND CMP (BY SIMILARITY) CATALYTIC ACTIVITY: 2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol 2,4-cyclodiphosphat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FUNCTION: CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL PHOSPHATE INTO 2C-METHYL-D-ERYTHRITOL 2,4-CYCLODIPHOSPHATE ALCMP. ALSO CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SWISS-PROT entry is copyright. It is produced through a deen the Swiss Institute of Bioinformatics and the EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          110;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ш
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GVAVDQVNVKATTTERLGFTGREEGIAVHAVALL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKYLPHVPGMRANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MRIGHGYDVHRFGEGDFITLGGVRIPHKHGLVAHSDGDVLLHALSDALLGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FPDTDPRFKGADSRALLRHVVAIVAEKGWKVGNVDATIVAQAPKVAPHIETMRGLIAEDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 71.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gammaproteobacteria; Vibrionales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No. 8.38
7; Mismatches
                                                    Complete proteome 42B0AA40EFEFFC6A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     . 8.3e-47;
cches 27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Noved. Usage by an (See http://www.isb-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              synthase
                                                        CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (표
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -61b
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4.6.1.12}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  collaboration .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1ts
```

유

60

```
RESULT 3
ISPF UT
ISPF V
Q8DC59
DT 15-SEP
DT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Loc
Matches
Matches
                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                               Isoprene
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Complete genome sequence of Vibrio vulnificus CMCP6.";
Submitted (DEC-2002) to the EMBL/GenBank/DDBJ databases.
-!- FUNCTION: Converts 4-diphosphocytidyl-2C-methyl-D-erythritol 2-
-phosphate into 2C-methyl-D-erythritol 2,4-cyclodiphosphate and
CMP. Also converts 4-diphosphocytidyl-2C-methyl-D-erythritol into
2C-methyl-D-erythritol 3,4-cyclophosphate and CMP (By similarity).
-!- CATALYTIC ACTIVITY: 2-phospho-4-(cytidine 5'-diphospho)-2-C-
methyl-D-erythritol = 2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         15-SEP-2003 (Rel. 42, Created)
15-SEP-2003 (Rel. 42, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                          PROSITE;
                                                                                                                                                                                      InterPro; IPR003526; YgbB. Pfam; PF02542; YgbB; 1.
                                                                                                                                                                                                                                  EMBL; AE016802; AA010006.1; -.
HAMAP; MF_00107; -; 1.
                                                                                                                                                                                                                                                                                                               entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                          use by non-profit institutions as long as modified and this statement is not removed. U
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Rhee J.H., Kim S.Y., Choy H.B.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRAIN=CMCP6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bacteria; Proteobacteria; Vibrionaceae; Vibrio.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Vibrio vulnificus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ISPP OR VV11583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q8DC59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=672;
                                                                                                                                                                 FIGRFAMs;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DABIA 345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; fifth step. SIMILARITY: BELONGS TO THE ISPF FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                           European Bioinformatics Institute.
                                                                                                                                                                                                                                                                                                                                                                                                                                SWISS-PROT entry is copyright. It is producen the Swiss Institute of Bioinformatics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        63
                                                                          02542,
3; TIGRO0151; ispr; 1.
; PS01350; ISPP; 1.
ne biosynthesis; Lyase; C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ш
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       μ
                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity 70.7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (MECDP-synthase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LETDVDFINVKATTTEKIGFEGRKEGIAVQAVVLIER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HFPDTDDKWKGADSRELLKDVYRRVKAQGYVLGNADVTI I AQAPKMAPYI QAMCAA I AEÐ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HFPDTDPNFKGADSRVLLKHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MIRIGHGEDVHREGGEGPIIIGGVKIPYEQGLIAHSDGDVALHALSDALLGAIAAGDIGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MIRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STANDARD;
                 68.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Chung
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            68.7%;
70.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gammaproteobacteria; Vibrionales;
19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S.S., Kim J.J., Moon Y.H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 554; DB
Pred. No. 7.6e
16; Mismatches
                                              Score 551;
                       Pred.
                                                                                               Complete proteome 
0E888FE050160112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
Mismatches
                    No. 1.5e-44,
                                                                                                                                                                                                                                                                                                                                                                                                                                     It is produced through a conformation and the EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          158
                                                                                                                                                                                                                                                                                                                                        (See
                                                                                                                                                                                                                                                                                                                                                                                 There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7.6e-45;
hes 30;
                                              DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ž
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB
                                                                                                                                                                                                                                                                                                                                   . Usage by and fo http://www.isb-sib.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 synthase (EC 4.6.1.12)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              157
                                           Length
                                                                                               CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 158;
  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                           restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Jeong
                                                                                                                                                                                                                                                                                                                                                                                                                                       a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ;
;
  0
                                                                                                                                                                                                                                                                                                                                                                  for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                                                                                                                                                                                                                           .ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
  Gaps
                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
```

Ø.

```
Ś
                                                           밁
                                                                                     Ś
                                                                                                                      밁
                                                                                                                                                                                                                                              RESULT
ISPF_VI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                 Query Match
Best Local S
Matches 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VIBPA
                                                                                                                                                                                                                                                                                                                                                                                                                                   This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINB=22508454; PubMed=12620739; Makino K., Oshima K., Kurokawa K., Yokoyama K., Uda T., Tagomori K., Kijima Y., Najima M., Nakano M., Yamashita A., Kubota Y., Kimura S., Yasunaga T., Honda T., Shinagawa H., Hattori M., Iida T.; "Genome sequence of Vibrio parahaemolyticus: a pathogenic mechanism distinct from that of V. cholerae."; Lancet 361:743-749(2003)
                                                                                                                                                                                                                                           EMBL; AP005081; BAC60821.1; -.
HAMAP; MF 00107; -; 1.
PROSITE; F501350; ISPF; 1.
Isoprene biosynthesis; Lyase; (
SEQUENCE 158 AA; 16949 MW;
                                                                                                                                                                                                                                                                                                                                                   the Buropean Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed. entities requires a license agreement (See
                                                                                                                                                                                                                                                                                                                                                                                                                        between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            15-SEP-2003
15-SEP-2003
15-SEP-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN=RIMD 2210633
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Vibrio parahaemolyticus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ISPF OR VP2558.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGBIN_AGSI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S-SEP-2003 (Rel. 42, Last sequence up: -SEP-2003 (Rel. 42, Last annotation: -C-methyl-D-erythritol 2,4-cyclodipho
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     brionaceae; Vibrio.
                                                                                                                                                                                                                                                                                                                                         send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FUNCTION: Converts 4-diphosphocytidyl-2C-methyl-D-erythritol 2-phosphate into 2C-methyl-D-erythritol 2,4-cyclodiphosphate and CMP. Also converts 4-diphosphocytidyl-2C-methyl-D-erythritol into 2C-methyl-D-erythritol 3,4-cyclophosphate and CMP (By similarity) CATALYTIC ACTIVITY: 2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol = 2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; fifth step SIMILARITY: BELONGS TO THE ISPF FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                SWISS-PROT entry is copyright. It is produced through en the Swiss Institute of Bioinformatics and the EN
121
                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                   107;
                                                           61
                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                      44
                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (MECDP-synthase)
                                                                           HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD
                                                                                                                      MIRIGHGFDVHKFGGBGPVIIGGVAIPYEQGLIAHSDGDVALHALTDALIGALAAGDIGR
                           LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI
                                                           HEPOTODKWKGANSRELLKDVYRRVKEQGYRLGNADVTIMAQAPKMAPHIDAMCAAIAED
                                                                                                                                                  MIRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LETDIRNÍNVKATTTERLGETGRKEGIÁTEÁVVLL 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HFPDTDDKWKGVDSRELLKDVYRRVKEQGYKLGNADVTIIAQAPKMAPYIDAMREAIAHD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STANDARD;
                                                                                                                                                                                               69.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Serotype
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ast annotation update)
2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gammaproteobacteria; Vibrionales;
                                                                                                                                                                                 19;
                                                                                                                                                                                 Score 550; DB
Pred. No. 1.8e
19; Mismatches
                                                                                                                                                                                                                                             Complete proteome. F8C9FFA4E03D3D1D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     03:K6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           158
                                                                                                                                                                                                                                                                                                                                                        noved. Usage by and for commercia
{See http://www.isb-sib.ch/announce,
                                                                                                                                                                                                                                                                                                                                                                                  There are no restrictions ong as its content is in
                                                                                                                                                                                               DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                             155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             synthase
                                                                                                                                                                                                             Length 158;
                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (EC 4.6.1.12)
                                                                                                                                                                                                                                                                                                                                                                                                         gh a collaboration
                                                                                                                                                                                                                                                                                                                                                                     for
                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                     collaboration
                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ω×
                                                                                                                                                                                                                                                                                                                                                                                         ğ
                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                     60
                                                                                                                      60
```

```
RESULT
EMBL; AE013685; AAM84414.1; ALT_INIT.
PIR; AB0408; AB0408.
HAMAP; MF_00107; -; 1.
InterPro; IPR003526; YgbB.
Pfam; PF02542; YgbB; 1.
TIGRPAMS; TIGR00151; ispF; 1.
PROSITE; PS01350; ISPF; 1.
Lyase; Isoprene biosynthesis; Complete SEQUENCE 162 AA; 17182 MM; 9A295411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Deng W., Burland V., Plunkett G. III, Boutin A., Mayhew G.F., Perna N.T., Rose D.J., Mau B., Zhou S., Schwartz D.C., Fetherston J.D., Lindler L.B., Brubaker R.R., Plano G.V., Straley S.C., McDonough K.A., Nilles M.L., Matson J.S., Blattn Perry R.D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE=21470413; PubMed=11586360;
Parkhill J., Wren B.W., Thomson N.R., Titball R.W., Holden M.T.
Parkhill J., Wren B.W., Thomson N.R., Churcher C., Mungall R.
Prentice M.B., Sebalhia M., James K.D., Churcher C., Mungall R.
Baker S., Basham D., Bentley S.D., Brooks K., Cerdeno-Tarraga
Chillingworth T., Cronin A., Davies R.M., Davis P., Dougan G.,
Peltwell T., Hamlin N., Holroyd S., Jagels K., Karlyshev A.V.,
Peather S., Moule S., Oyston P.C.F., Quail M., Rutherford K.,
Simmonds M., Skelton J., Stevens K., Whitehead S., Barrell B.G.
"Genome sequence of Yersinia pestis, the causative agent of pl
                                                                                                                                                                                                                                                                                                                                                                                                   modified and this statement
                                                                                                                                                                                                                                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN=KIM5 / Biovar Mediaevalis;
MEDLINE=22137863; PubMed=12142430;
                                                                                                                                                                                                                                                                         EMBL; AJ414156; CAC92590.1; -
                                                                                                                                                                                                                                                                                                                                      or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                      entities requires a license agreement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Genome sequence of Yersinia pestis KIM.";

J. Bacteriol. 184:4601-4611(2002).

-|- FUNCTION: Converts 4-diphosphocytidyl-2C-methyl-D-erythritol phosphate into 2C-methyl-D-erythrifol 2,4-cyclodiphosphate ar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN=CO-92 / Biovar Orientalis; MEDLINE=21470413; PubMed=11586360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QEZBP7;
28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Nature 413:523-527(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        28-FEB-2003 (Rel. 41, La
28-FEB-2003 (Rel. 41,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Enterobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ISPF OR YPO3360 OR Y0829
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ISPF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       phosphate into 2C-methyl-D-erythritol 2,4-cyclodiphosphate and CMP. Also converts 4-diphosphocytidyl-2C-methyl-D-erythritol into 2C-methyl-D-erythritol 3,4-cyclophosphate and CMP (By similarity). 2C-methyl-D-erythritol 3,4-cyclophosphate and CMP (By cimilarity). CATALYTIC ACTIVITY: 2-phospho-4 (cycldine 5'-diphospho)-2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; fifth step SIMILARITY: BELONGS TO THE ISPF FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     YERPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (MECDP-synthase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FROM N.A.
IM5 / Biovar Mediaevalis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    N A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                   institutions as long as atement is not removed. U
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Yersinia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gammaproteobacteria;
      Complete proteome 9A295411D3DFB1EB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              the causative agent of plague.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     162
                                                                                                                                                                                                                                                                                                                                                                   (See http://www.isb-sib.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Titball R.W., Holden M.T.G., Churcher C., Mungall K.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                             There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Enterobacteriales;
         CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Barrell B.G.;
                                                                                                                                                                                                                                                                                                                                                                                                   Ϋ́
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (B)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              an G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 4.6.1
                                                                                                                                                                                                                                                                                                                                                                                                      for
                                                                                                                                                                                                                                                                                                                                                                          .ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .12)
```

Query Match Best Local S Matches 107

Similarity

68.6%;

107;

Conservative

17;

Score 542; DB 1 Pred. No. 1e-43; 7; Mismatches

1; 30;

Length

Indels

٧,

Gaps

56

FPDTDPAFKGADSRELLREAWRRIQAKGYALGNVDVTIIAQAPKMLPHIPQMRVFIAEDL

120

```
Ś
                        ₽
                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  멂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q8FEJ6;
15-SEP-2003
                                                                                                                         Isoprene
SEQUENCE
                                                                                                                                                                                                                                                       This SWISS-PROT entry is copyright. It is produced through a collab between the Swiss Institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for commodified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Escherichia coli 06.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            15-SEP-2003 (Rel. 42, Created)
15-SEP-2003 (Rel. 42, Last sequence update)
15-SEP-2003 (Rel. 42, Last sequence update)
2-C-methyl-D-crythritol 2,4-cyclodiphosphate synthase (EC 4.6.1.12)
(MECDF) (MECDF-synthase).
                                                                                                                      TICREAMS, TIGRO0151; ispF; 1.

PROSITE; PS01330; ISPF; 1.

ISOPTEND TO SYNTHESIS; LYJASE; COMPLETE PROLEOME.

SEQUENCE 159 AA; 16867 MW; 8FD4573623BA4549 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=217992;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Enterobacteriaceae; Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bacteria; Proteobacteria;
                                                                                                                                                                                                                                  or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                           modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ISPF OR C3313
                                                                                                                                                          InterPro; irau-
ofam; PF02542; YgbB;
                                                                                                                                                                                                HAMAP;
                                                                                                                                                                                                         EMBL; AE016765; AAN81762.1; -.
                                                                                                                                                                                                                                                                                                                                 PATHWAY: Nonmevalona SIMILARITY: BELONGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9.TODE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                        107;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
                                                                                                                                                                               MF_00107; -; 1.
ro; IPR003526; YgbB.
                          4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                سر
                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DLETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
 FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL
                                         IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KLFPDTDPAFKGADSRGLLREAYRRILAKGYKLGNLDITIIAQAPKMAPHIPQMRVNLAE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KHEPDTIDENEKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVEGMRANIAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MRIGHGFDVHKFGENGSGFLIIGGVRIFYEKGLLAHSDGDVALHAATDALLGAAALGDIG
                       MRIGHGFDVHAFGGEGPIIIGGVRIPYEKGLLAHSDGDVALHALTDALLGAAALGDIGKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DLOCHYDDINVKATTTEQLGFTGRGEGIACEAVVLL 156
                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                Nonmevalonate terpenoid biosynthesis pathway; PY: BELONGS TO THE ISPF FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STANDARD;
                                                                                   69.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gammaproteobacteria;
                                                                       14
                                                                       Score 537; DB 1
Pred. No. 3e-43;
4; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    159
                                                                                             DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ã
                                                                        33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Enterobacteriales,
                                                                                             Length
                                                                        Indels
                                                                                                                                                                                                                                                                                                                                             fifth step
                                                                                                                                                                                                                                                                                                       a collaboration
                                                                       0
                                                                                                                                                                                                                                                                                             outstation
                                                                       Gape
  121
                        60
                                              5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               용
```

b

```
RESULT 7
INSPER A
INSPER A
INSPER A
AC 936663
DT 01-UNN
DT 15-SEP
GN ISPEC
GN IS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Herz S., w.
MEDLINE=21074935; PubMed=11206551;
Perna N.T., Plunkett G. III, Burland V., Mau B., Glasner J.D.,
Rose D.J., Mayhew G.F., Evans P.S., Gregor J., Kirkpatrick H.A.,
Posfai G., Hackett J., Klink S., Boutin A., Shao Y., Miller L.,
Grotbeck E.J., Davis N.W., Lim A., Dimalanta E.T., Potamousis K.,
Apodaca J., Anantharaman T.S., Lin J., Yen G., Schwartz D.C.,
Welch R.A., Blattner F.R.;
"Genome sequence of enterohaemorrhagic Escherichia coli O157:H7.";
Wature 409:529-533(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ISPF_ECOLI
                                                                                                                                                                                                                                                                                                                                                                                                      SPECIES=E.coli; STRAIN=K12 / MG1655; MEDLINB=97426617; PubMed=9278503; Bloch C.A., Perna Blattner F.R., Plumkett G. III, Bloch C.A., Perna Riley M., Collado-Vides J., Glasner J.D., Rode C. Gregor J., Davis N.W., Kirkpatrick H.A., Goeden M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Studies on the nonmevalonate pathway: formation of 2-C-me erythritol 2,4-cyclodiphosphate from 2-phospho-4-{cytidine diphospho}-2-C-methyl-D-erythritol.";
                                                                                                                                                                                                                                                                                                                              "The complete genome sequence Science 277:1453-1474(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2C-methyl-D-erythritol cyclodiphosphate.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Li C., Ichikawa J.K., Ravetto J.J., Kuo H.-C., Fu J.C., Clarke
"A new gene involved in stationary-phase survival located at 50
minutes on the Escherichia coli chromosome.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SPECIES=E.coli; STRAIN=MP180;
MEDLINE=95014035; PubMed=7928962;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Enterobacteriaceae; Escherichia.
NCBI_TaxID=562, 83334, 623;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Shigella flexmeri.
Bacteria; Proteobacteria; Gammaproteobacteria;
                                                                                                                                                                                                                                                 SPECIES=E.coli;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SPECIES=E.coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Escherichia coli 0157:H7,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Escherichia coli,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-JUN-1994
                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Takagi M., Kuzuyama T., Kaneda K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A., AND CHARACTERIZATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Biosynthesis of terpenoids: YgbB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=20183914; PubMed=10694574;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A., PARTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1-JUN-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      etrahedron Lett. 41:3395-3398(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MECPS)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5-SEP-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          . Bacteriol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -JUN-1994 (Rel. 29, Last sequence update)
-SEP-2003 (Rel. 42, Last annotation update)
-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PS) (MECDP-synthase).
OR MECS OR B2746 OR Z4054 OR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Wungsintaweekul J., Schuhr C., Fellermeier M., Bisenreich
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCHMDDVNVKATTTEKLGFTGRGEGIACEAVALL 154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Acad.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          176:6015-6022(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STANDARD;
                                                                                                                                                                                                                                                 STRAIN=0157:H7 / EDL933 / ATCC 700927;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sci.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           29, Created)
29, Last seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        U.S.A. 97:2486-2490(2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2-phosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Schuhr C.
                                                                                                                                                                                                                                                                                                                                                           얁
                                                                                                                                                                                                                                                                                                                                                           Escherichia coli K-12.*;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         protein converts 4-diphosphocytidyl-
e to 2C-methyl-D-erythritol 2,4-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ECS3600 OR SF2769
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Watanabe H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ΣÞ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AND CHARACTERIZATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 inabe H., Dairi T., Seto H.
formation of 2-C-methyl-D-
                                                                                                                                                                                                                                                                                                                                                                                                            Goeden M.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ጅ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Hecht S., I
Zenk M.H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Perna N.T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Luettgen
, Bacher /
                                                                                                                                                                                                                                                                                                                                                                                                               Rose D.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (E)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Burland V.,
                                                                                                                                                                                                                                                                                                                                                                                                                                   G.F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Þ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          :
:
```

```
PDB; 1JY8; 30-JAN-02.
PDB; 1KNU; 18-JUN-02.
PDB; 1KNK; 18-JUN-02.
PDB; 1KNK; 18-JUN-02.
ECGGene; EG11816; ispF.
HAMAP; MF_00107; -; 1.
InterPro; IPR003526; YgbB.
Pfam; PF02542; YgbB; 1.
PROSITE; PS01350; ISPF; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SPECIES: flexneri; STRAIN=301 / Serocype ...,
SPECIES: flexneri; STRAIN=301 / Serocype ...,
MEDLINE=22272406; PubMed=12384590;
Uin Q., Yuang Z., Xu J., Wang Y., Shen Y., Lu W., Wang J., Liu H.,
Uin Q., Yang T., Zhang X., Zhang J., Yang G., Wu H., Qu D., Dong J
Yang J., Yang F., Zhang X., Zhang J., Kan B., Ding K., Chen S.,
Sun L., Xue Y., Zhao A., Gao Y., Zhu J., Kan B., Ding K., Chen S.,
Cheng H., Yao Z., He B., Chen R., Ma D., Qiang B., Wen Y., Hou Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL;
EMBL;
EMBL;
EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  between the SWISS INSTITUTE. There are no itsurvers. The European Bioinformatics Institutions as long as its content is in no way use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial modified and this statement is not removed. Usage by and for commercial modified and this statement agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             through
Nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hayashi T., Makino K., Ohnishi M., Kurokawa K., Ishii K., Yokoyama K., Hain C.-G., Ohtsubo E., Nakayama K., Murata T., Tanaka M., Tobe T., Iida T., Takami H., Honda T., Sasakawa C., Ogasawara N., Yasunaga T., Kuhara S., Shiba T., Hattori M., Shinagawa H.;

"Complete genome sequence of enterchemorrhagic Escherichia coli Ol57:H7 and genomic comparison with a laboratory strain K-12.";

DNA Res. 8:11-22(2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (6)
SEQUENCE FROM N.A.
SPECIES=E.Coli; STRAIN=0157:H7 / RIMD 0509952;
SPECIES=E.Coli; STRAIN=0157:H7 / RIMD 0509952;
MEDLINE=21156231; PubMed=11258796;
MEDLINE=21156231; PubMed=11258796; PubMed=11258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Electrophoresis 20:2181-2195(1999).

-!- EUNCTION: CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL 2-PHOSPHATE INTO 2C-METHYL-D-ERYTHRITOL 2, 4-CYCLODIPHOSPHATE AND COMP. ALSO CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL INTO 2C-METHYL-D-ERYTHRITOL 3, 4-CYCLOPHOSPHATE AND CMP.

-!- CATALYTIC ACTIVITY: 2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol = 2-C-methyl-D-erythritol 2, 4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                           PIR;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Fountoulakis M., Takacs M.-F., Berndt P., Langen H., "Enrichment of low abundance proteins of Escherichia hydroxyapatite chromatography.";
                                  yase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=99420866; PubMed=10493123;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IDENTIFICATION BY MASS SPECTROMETRY
                                                                                                                                                                                                                                                                                                                                                      ; A85924; A85924.
; H91078; H91078.
; I55083; I55083.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COFACTOR: MAGNESIUM OR MANGANESE.
PATHWAY: Nonmevalonate terpenoid biosynthesis
SIMILARITY: BELONGS TO THE ISPF PAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                             ; U29579; AAA69256.1;
, AE0000358; AAC75788.1;
, AE005052; AAG57853.1;
, AE005502; BAB37023.1;
, AE015291; AAN44258.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AF230738; AAF44656.1; -. AB038256; BAA95145.1; -. U29579; AAA69256.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                L07942;
                                  Isoprene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sequence of Shigella flexneri 2a: insights into pathogenicity comparison with genomes of Escherichia coli K12 and O157."; Acids Res. 30:4432-4441(2002).
PS01350; ISPF; 1.
soprene biosynthesis; Magnesium; Manganese;
                                                                                                                                                                                                                                                                                                                                   16-MAY-02.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAA79837
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          pathway; fifth
                            Complete proteome;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Takacs E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .
...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      step.
```

```
RESULT B
INPESSAL

AC (0824
DT 28-F
DT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            멅
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                   This SWI
                                                                                                                                                                                                                                                                                   J. Bacteriol. 185:2330-2337(2003).

-: PUNCTION: Converts 4-diphosphocytidyl-2C-methyl-D-erythritol 2-phosphate into 2C-methyl-D-erythritol 2,4-cyclodiphosphate and CMP. Also converts 4-diphosphocytidyl-2C-methyl-D-erythritol into 2C-methyl-D-erythritol 3,4-cyclophosphate and CMP (By similarity).

-:- CATALYTIC ACTIVITY: 2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=21534947; PubMed=11677608;
Parkhill J., Dougan G., James K.D., Thomson N.R., Pickard D., Wain J. Churcher C., Mungall K.L., Bentley S.D., Holden M.T.G., Sebaihia M., Eaker S., Basham D., Brooks K., Chillingworth T., Connerton P., Eaker S., Davis P., Davies R.M., Dowd L., White N., Farrar J., Cronin A., Davis P., Davies R.M., Dowd L., White N., Farrar J., Feitwell T., Hamin N., Haque A., Hien T.T., Holroyd S., Jagels K., Krogh A., Larsen T.S., Leather S., Moule S., O'Gaora P., Parry C., Quail M., Rutherford K., Simmonds M., Skelton J., Stevens K., Whitehead S., Barrell B.G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ISPF SALTI
Q8Z472;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
STRALN=TY2 / ATCC 700931;
MEDLINE=22531367; PubMed=12644504;
MEDLINE=22531367; PubMed=12644504;
Deng W., Liou S.-R., Plumkett G. III, Mayhew G.F.,
Burland V., Kodoyianni V., Schwartz D.C., Blattner
"Comparative genomics of Salmonella enterica serova"
"Comparative genomics of Salmonella enterica serova"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Complete genome sequence of a multiple drug resistant Salmonella enterica serovar Typhi CT18.";
Nature 413:848-852(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2-C-methyl-D-erythritol 2,4-cyclodiphosphate synthase (EC 4.6.1.12) (MECPS) (MECPS) (MECPS) (MECOP-synthase).
ISPF OR STY3054 OR T2830.
Salmonella .....
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN=CT18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Enterobacteriaceae; Salmonella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Bacteria; Proteobacteria; Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Salmonella typhi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       28-FEB-2003 (Rel. 41, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SALTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NCBI_TaxID=601;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                      s SWISS-PROT entry is copyright. It is produ ween the Swiss Institute of Bioinformatics European Bioinformatics Institute. There a by non-profit institutions as long as i
                                                                                                                                                                                               PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; fifth step SIMILARITY: BELONGS TO THE ISPF FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CT18.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   122
                                                                                                                                                                                                                                                                 O
T
T
T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            107;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCHMDDVNVKATTTEKLGFTGRGEGIACEAVALL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FPDTDFNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FPDTDPAFKGADSRELLREAWRRIQAKGYTLGNVDVTIIAQAPKMLPHIPQMRVFIAEDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MRIGHGFDVHAFGGEGPIIIGGVRIPYEKGLLAHSDGDVALHALTDALLGAAALGDIGKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IRVGMGYDVHRENDGDHI ILGGVKI PYEKGLEAHSDGDVVLHALADA ILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          16897 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            66.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 537; DB
Pred. No. 3e-4
l4; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9FC5563623A62939 CRC64;
                                                                                                                   It is produced through a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3e-43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1; Length 159;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       serovar Typhi strains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      33;
                                                                                                             and the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Rose
F.R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          D.J
                                                                                                             EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ţy2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
```

the Buropean Bioinformatics Institute. There are no restrict by non-profit institutions as long as its content is modified and this statement is not removed. Usage by and for entities requires a license agreement (See http://www.isb-sib.

restrictions

8

way

for

ch/announce/ commercial

```
RESULT IN THE PROPERTY OF THE 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SSEREEREERE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local S
Matches 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; AL627276; CAD06035.1; -.
EMBL; AB016843; AAO70387.1; -.
HAMAP; MF 00107; -; 1,
InterPro; IPR003526; YgbB.
Pfam; PF02542; YgbB; 1.
TIGRFAMS; TIGR0151; ispF; 1.
PROSITE; PS01350; ISPF; 1.
Lysse; Isoprene biosynthesis; COSEQUENCE 159 AA; 16885 MW; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ISPF_SALTY
Q8ZMF7;
                         This SWISS-PROT entry is copyright. It is produced through a collaboratio between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on it use by non-profit institutions as long as its content is in no wa modified and this statement is not removed. Usage by and for commercia entities requires a license agreement (See http://www.isb-sib.ch/announce or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  McClelland M., Sanderson K.E., Spieth J., Clifton S.W., Latre Courtney L., Porwollik S., Ali J., Dante M., Du F., Hou S., L. Leonard S., Nguyen C., Scott K., Holmes A., Grewal N., Mulvan Ryan E., Sun H., Florea L., Miller W., Stoneking T., Nhan M., Waterston R., Wilson R.K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         28-FEB-2003 (Rel. 41, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
28-FEB-2003 (Rel. 41, Last annotation update)
2-C-methyl.-D-erythritol 2,4-cyclodiphosphate
(MECPS) (MECDP-synthase).
ISPF OR STM2929.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SALTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nature 413:852-856(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
STRAIN=LT2 / SGSC1412 / AFCC 700720;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Salmonella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Salmonella typhimurium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=21534948; PubMed=11677609;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Complete genome sequence of Salmonella enterica
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   φ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   send
                                                                                                                                                                                                                                                          PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; fifth step SIMILARITY: BELONGS TO THE ISPF FAMILY.
                                                                                                                                                                                                                                                                                                                                           FUNCTION: Converts 4-diphosphocytidyl-2C-methyl-D-erythritol 2-phosphate into 2C-methyl-D-erythritol 2;4-cyclodiphosphate and CMP. Also converts 4-diphosphocytidyl-2C-methyl-D-erythritol into 2C-methyl-D-erythritol 3,4-cyclophosphate and CMP (By similarity). CATALYTIC ACTIVITY: 2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol = 2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                107;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCHMDDVNVKATTTEKLGFTGRGEGIACEAVALL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BIDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FPDTDPAFKGADSRELLREAWRRIQAKGYTLGNVDVTIIAQAPKMLPHIPQMRVFIAEDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MRIGHGFDVHAFGGEGPIIIGGVRIPYEKGLLAHSDGDVALHALTDALLGAAALGDIGKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         69.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 537; DB
Pred. No. 3e-4:
14; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Complete proteome.
9FD9263625662939 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3e-43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 1; Length 159;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ā
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             <u>ري</u>
د
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         serovar Typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (E)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          , Latreille P.,
u S., Layman D.,
Mulvaney B.,
                                                        -sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4.6.1.12)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                            collaboration
L outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
```

V

```
RESULT 10
ISPF BACSU
ID ISPF BACSU
ID ISPF BACSU
ID ISPF BACSU
O06756
DT 01-JUN
DT 01-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Sim
Matches 107;
MEDINE-100;
MEDINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    StyGene; SG?????; ispF.
HAMAP; MF_00107; -; 1.
InterPro; IPR003526; YgbB.
Pfam; PF02542; YgbB; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacillus subtilis
Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-JUN-1994 (Rel. 29, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 206756;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TIGREAMS; TIGRO0151; ispF; 1.
PROSITE; PS01350; ISFF; 1.
Lyase; Isopprene biosynthesis; Complete proteome.
SEQUENCE 159 AA; 16899 MW; 9FD88D2C95662939 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ogasawara N., Nakai S., Yoshikawa
"Systematic sequencing of the 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 cysteine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 encoding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=94171772; Gagnon Y., Breton
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-JUN-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL; AE008833;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=96051385;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Clustering and co-transcription of the Bacillus subtilis genes encoding the aminoacyl-tRNA synthetases specific for glutamate cysteine and the first enzyme for cysteine biosynthesis.";
J. Biol. Chem. 269:7473-7482(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (MECPS)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BACSU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (MECDP-synthase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCHMDEVNVKATTTEKLGFTGRGEGIACEAVALL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       cnromosome containing i:1-14(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FPDTDPAFKGADSRELLREAWRRIQAKGYTIGNVDVTIIAQAPKWLPHIPQWRVFIAEDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MRIGHGFDVHAFGGEGPIIIGGVRIPYEKGLLAHSDGDVALHALTDALLGAAALGDIGKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IRVGMGYDVHRFNDGDHIILGGVKIFYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAL21809.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PubMed=7510287;
R., Putzer H., Pelchat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PubMed=7584024;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     66.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 537; DB 1
Pred. No. 3e-43;
4; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .H.;

kilobase region of the

ne replication origin.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bacillaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  <u>,</u> 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ;
E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Grunberg-Manago
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 159;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (EC 4.6.1.12)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
```

```
RESULT
ISPF_HI
ID IS
AC PA
DT 01
DT 01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
Matches 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RA Kurita K., Lapidus A., Lardinois S., Lauber J., Lazarevic V.,

RA Lee S.M., Levine A., Liu H., Masuda S., Mauel C., Medigue C.,

RA Medina N., Mellado R.P., Mizumo M., Moestl D., Nakai S., Noback M.,

RA Medina N., Mellado R.P., Mizumo M., Moestl D., Nakai S., Noback M.,

RA Noone D., O'Reilly M., Ogawa K., Ogiwara A., Oudega B., Park S.H.,

RA Parro V., Pohl T.M., Portetelle D., Porwollik S., Prescott A.M.,

A Presecan E., Pujic P., Purmelle B., Rapport G., Rey M., Reynolds S.,

Rieger M., Rivolta C., Rocha E., Roche B., Rose M., Sadaie Y.,

A Rieger M., Rivolta C., Rocha E., Roche B., Rose M., Sadaie Y.,

A Sato T., Scanlan E., Schleich S., Schroeter R., Scoffone F.,

Sekiguchi J., Sekowska A., Seror S.J., Serror P., Shin B.S., Soldo B.,

Sorokin A., Tacconi E., Takagi T., Takahashi H., Takemaru K.,

Takeuchi M., Tamakoshi A., Tanaka T., Terpstra P., Tognoni A.,

A Sato T., Wedler E., Wedler E., Wedler E., Westzenegger T.,

A Viari A., Wambutt R., Wedler E., Wedler H., Weitzenegger T.,

Winters P., Wipat A., Yamamoto H., Yamane K., Yasumoto K., Yata K.,

"The complete genome sequence of the Gram-positive bacterium Bacillus

"The complete genome sequence of the Gram-positive bacterium Bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PIR, F69741; F69741.
SubtiList; BG10153; ispF.
HAMAP; MF 00107; ; i.
InterPro; TPR003526; YgbB.
Pfam; PF02542; YgbB; 1.
TIGRPAMS; TIGR00151; ispF; 1.
PROSITE; PS01350; ISPF; 1.
"ISPF_HAEIN
P44815;
01-NOV-1995
01-NOV-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation—the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial continuous and the statement is set the content in the commercial continuous and the statement is not removed. Usage by and for commercial continuous and the statement is not removed. Usage by and for commercial continuous and the statement is not removed. Usage by and for commercial continuous and the statement is not removed. Usage by and for commercial continuous and the statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       entities requires a license agreement (Some send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Nature 390:249-256(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kobayashi Y., Koetter P., Koningstein G., Krogh S., Kumano
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; fifth step SIMILARITY: BELONGS TO THE ISPF PAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FUNCTION: CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL 2-PHOSPHATE INTO 2C-METHYL-D-ERYTHRITOL 2,4-CYCLODIPHOSPHATE AND CMP. ALSO CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL INTO 2C-METHYL-D-ERYTHRITOL 3,4-CYCLOPHOSPHATE AND CMP (BY SIMILARITY).

CATALYTIC ACTIVITY: 2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    L14580; AAA21795.1; -. D26185; BAA05325.1; -. Z99104; CAB11867.1; -.
                                                                                                                                                                                                                                                            5
                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                      103;
                                                                                                                                                                                                                                                                                                                                                 μ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Isoprene biosynthesis; Complete proteome.
The 158 AA; 17126 MW; ED11D03EC3752BD0 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                 HEPDTDPNEKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD
                                                                                                                                                                       LEADVSQVNVKATTTEKLGFTGRAEGIAAQATVLIQK 157
                                                                                                                                                                                                                LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                       HEPDTDPEEKDADSEKLLOHVWGIVKOKGYVLGNIDCTIIAQKPKMLPYIEDMRKRIAEG
                                                                                                                                                                                                                                                                                                                                                 MFRIGQGFDVHQLVBGRPLIIGGIEIFYEKGLLGHSDAD
                                                                                                                                                                                                                                                                                                                                                                   MIRVGMGYDVHRFNDGDHIILGGVKIFYEKGLEAHSDGDVVLHALADAILGAAALGDIGK
  (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                  STANDARD;
32,
                                                                                                                                                                                                                                                                                                                                                                                                                                                      65.68;
    Last
                         Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                      18;
  sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 534; DB
Pred. No. 5.6e
18; Mismatches
                                                                  PRT:
                                                                  158
                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 1; I
5.6e-43;
les 36;
                                                                3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 158;
                                                                                                                                                                                                                                                                                                                                            VLLHTVADACLGAVGEGDIGK
                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .
                                                                                                                                                                                                                                                                                                                                                                                                                                   0
                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                            60
                                                                                                                                                                                                                                                                                                                                                                                        60
```

```
Ś
                                  밁
                                                               δ
                                                                                                                                                                  Matches
                                                                                                                  Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Fleischmann R.D., Adams M.D., White O., Clayton R.A., Kirkness i Kerlavage A.R., Bult C.J., Tomb J.-F., Dougherty B.A., Merrick McKerlavage A.R., Sitton G., Fitzhugh M., Fields C.A., Gocayne J.D., Scott J.D., Shirley R., Liu L.-I., Glodek A., Kelley J.M., Weidman J.F., Fhillips C.A., Spriggs T., Hedblom E., Cotton M.D. Utterback T.R., Hanna M.C., Nguyen D.T., Saudek D.M., Brandon R. Fine L.D., Fritchman J.L., Fuhrmann J.L., Geoghagen N.S.M., Gnehm C.L., McDonald L.A., Small K.V., Fraser C.M., Smith H.O., Venter J.C.,
                                                                                                                                                                                                                                                                                                                                                                                                        This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the Ew the European Bioinformatics Institute. There are no restruct by non-profit institutions as long as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Electrophoresis 19:1819-1827(1998).

-: FUNCTION: CONVERTS 4-DIPHOSPHACTOL 2,4-CYCLODIPHOSPHATE AND PHOSPHATE INTO 2C-METHYL-D-ERYTHRITOL 2,4-CYCLODIPHOSPHATE AND CMP. ALSO CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL INTO 2C-METHYL-D-ERYTHRITOL 3,4-CYCLOPHOSPHATE AND CMP (BY SIMILARITY).

-:- CATALYTIC ACTULTY: 2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol = 2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                    HAMAD; MF 00107; -; 1.
HAMAD; MF 00107526; YgbB.
Fitam; PF02542; YgbB; 1.
FICHTORY TICKOULS; ispP; 1.
PROSITE; PS01350; ISPF; 1.
LYASE; Isoprene biosynthesis; Complete proteome; 3D-structure.
LYASE; Isoprene biosynthesis; Complete Proteome; 3D-structure.
SEQUENCE 158 AA; 17194 MW; DC34BF347DEC2EPF CRC64;
                                                                                                                                                                                                                                                                                                                                                                       modified and this statement is not removed. Usage by and foentities requires a license agreement (See http://www.isb-sib.
                                                                                                                                                                                                                                                                             PDB; 1JN1; 21-AUG-02.
TIGR; HI0671; -.
                                                                                                                                                                                                                                                                                                                                                           or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IDENTIFICATION BY MASS SPECTROMETRY. MEDLINE=98384070; PubMed=9719565; Fountoulakis M., Juranville J.F., Ro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN=Rd / NM20 / MEDLINE=95350630;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRAIN-Rd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacteria; Proteobacteria; Gam
Pasteurellaceae; Haemophilus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15-SEP-2003 (Rel. 42, Lage 2-C-methyl-D-erythritol
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Langen H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Science 269:496-512(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Haemophilus influenzae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Reference map of the low molecular mass proteins of Haemophilus influenzae.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CBI_TaxID=727,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Whole-genome random sequencing and assembly of Haemophilus influenzae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SPF OR HI0671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; fifth step SIMILARITY: BELONGS TO THE ISPF FAMILY.
                                                                                                                                                                                                                                                                                                            F64156;
                                                                                                  103;
                                                                                                                                                                                                                                                                                                              U32750; AAC22331.1;
F64156; F64156.
                                  \mu
                                                                                                                  Similarity
                                  (MECDP-synthase).
HFPDTDPNEKGADSRVLLRHVYGIVKEKGYKLVNADVTI IAQAPKMLPHVPGMRANIAAD
                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KW20 /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PubMed=7542800;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATCC
                                                                                                                66.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Last annotation update) ol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         51907;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gammaproteobacteria;
                                                                                                20;
                                                                                                Score 534; DB 1; 1
Pred. No. 5.6e-43;
0; Mismatches 34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     White O.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Roder D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Clayton R.A., Kirkness E.F., Dougherty B.A., Merrick J.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Evers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pasteurellales;
                                                                                                                              Length 158;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      :
;
                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                           restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Berndt
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SBC
CBC
                                                                                                                                                                                                                                                                                                                                                                                                                                              4.6.1.12)
                                                                                                                                                                                                                                                                                                                                                                                                                                              a collaboration
                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                               for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            יס<u>י</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       . R.C.,
                                                                                                                                                                                                                                                                                                                                                                              .ch/announce/
                                                                                                Gaps
     120
                                  60
                                                                                                0
```

LFPDTDMQYKNADSRGLLREAFRQVQEKGYKIGNVDITIIAQAPKMRPHIDAMRAKIAED

δ

121

LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157

```
RESULT 12
ISPF PASSIV
ID 153PF
ISPF PASSIV
ID 153PF
ISPF 16-00
DT 
      뎡
                                                      Ś
                                                                                                                       밁
                                                                                                                                                                           Ś
                                                                                                                                                                                                                                        ΟĠ
                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      문
                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ISPF PASMU
P57954;
16-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; AE006198; AAK03693.1; -.
HAMAB; MF 00107; -; 1.
InterPro; IPR003526; YgbB.
Pfam; PF02542; YgbB; 1.
TIGRFAMs; TIGR00151; ispF; 1.
PROSITE; PS01350; ISPF; 1.
Lyase; Isoprene biosynthesis; Complete proteome.
Lyase; Isoprene biosynthesis; 35B9CBA59147171E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      the European Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed. entities requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            May B.J., Zhang Q., Li L.L., Paustian M.L., Whittam T.S., Kapur V.;

"Complete genomic sequence of Pasteurella multocida Pm70.";

Proc. Natl. Acad. Sci. U.S.A. 98:3460-3465(2001).

-i- FUNCTION: CONVERTS 4-DIPHOSPHCYTIDYL-2C-METHYL-D-ERYTHRITOL 2-

PHOSPHATE INTO 2C-METHYL-D-ERYTHRITOL 2,4-CYCLODIPHOSPHATE AND

CMP. ALSO CONVERTS 4-DIPHOSPHCTTIDYL-2C-METHYL-D-ERYTHRITOL INTO

2C-METHYL-D-ERYTHRITOL 3,4-CYCLOPHOSPHATE AND CMP (BY SIMILARITY).

-i- CATALYTIC ACTIVITY: 2-phospho-4-(cytidine 5'-diphospho)-2-C-

methyl-D-erythritol = 2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          16-OCT-2001 (Rel. 40, Created)
16-OCT-2001 (Rel. 40, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PASMU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bacteria; Proteobacteria; Gammaproteobacteria; Pasteurellales; Pasteurellaceae; Pasteurella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -!- SIMILARITY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=21145866; PubMed=11248100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=747;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pasteurella multocida.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1SPF OR PM1609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (MECPS)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; fifth step-SIMILARITY: BELONGS TO THE ISPF FAMILY.
   121
                                                                                                                                                                                                                                                                                                                                                                      105;
                                                                                                                          61
                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                            Similarity
LACDIEQVNVKATTSERLGFTGRGEGIACEAVALV 155
                                                          LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                           HFPDTDPNFKGADSRVLLRHVYGIVKBKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD
                                                                                                                                                                                                                                           MIRIGHGFÐVHAFGGEGPIIIGGVAIÞYEKGLLAHSDGDVALHÁLTDALLGAVALGDÍGK
                                                                                                                    LFPDTDMQYKGADSRGLLREAYTQVQAKGYKVGNVDVTIIAQAPKMRPHIDAMRAAIAED
                                                                                                                                                                                                                                                                                        IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (MECDP-synthase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LOCDIEQVNVKATTTEKLGFTGROEGIACEAVALLIR 157
                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                            65.6%;
                                                                                                                                                                                                                                                                                                                                                                   15;
                                                                                                                                                                                                                                                                                                                                                            Score 529; DB
Pred. No. 1.7e
15; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            noved. Usage by and for commercial
(See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   There are no rest
                                                                                                                                                                                                                                                                                                                                                            DB 1; Length 158; .7e-42; es 35; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      restrictions on thent is in no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (EC 4.6.1.12)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              collaboration
                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                 120
                                                                                                                       120
                                                                                                                                                                                                                                           60
                                                                                                                                                                                                                                                                                                     60
```

RESULT 13

33335 5

ISPF NEIMB Q9JYM5; 16-OCT-2001 16-OCT-2001 28-FEB-2003

STANDARD;

160

A

(Rel. 40, Created)
(Rel. 40, Last sequence update)
(Rel. 41, Last annotation updat

```
RESULT 14
                                                                    밁
                                                                                           Q
                                                                                                                                    8
                                                                                                                                                            Ś
                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                   PIR; D83663; D83663.

HAMAP; MF 00107; -; 1.

InterPro; IPR003526; YgbB.

Pfam; PF02542; YgbB; 1.

TIGRFAMs; TIGR00151; ispF; 1.

PROSITE; P801350; ISFF; 1.
 NEIMB
                                                                                                                                                                                                                                                                                                                                        Lyase; I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          halodurans and genomic sequence comparison with Bacillus subtilis.";

Nucleic Acids Res. 28:4317-4331 (2000)

-i- FUNCTION: CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL 2-
PHOSPHATE INTO 2C-METHYL-D-ERYTHRITOL 2,4-CYCLODIPHOSPHATE AND
CYP. ALSO CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL INTO
2C-METHYL-D-ERYTHRITOL 3,4-CYCLOPHOSPHATE AND
CYC-METHYL-D-ERYTHRITOL 3,4-CYCLOPHOSPHATE AND CYP (BY SIMILARITY).

-i- CATALYTIC ACTIVITY: 2-phospho-4-(cycidine 5'-diphospho)-2-C-
methyl-D-erythritol = 2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        This SWISS-PROT entry is copyright. It is produced through a collab between the Swiss Institute of Bioinformatics and the EWEL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for comentities requires a license agreement (See http://www.isb-sib.ch/an or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q9KGF7;
16-OCT-2001
16-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL; AP001507; BAB03827.1; PIR; D83663; D83663.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE=20512582; PubMed=11058132;
Takami H., Nakasone K., Takaki Y., Maeno G., Si
Puji F., Hirama C., Nakamura Y., Ogasawara N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN=C-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacillus halodurans.
Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Horikoshi K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "Complete genome sequence of the alkaliphilic bacterium Bacillus halodurans and genomic sequence comparison with Bacillus subtili
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=86665;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ISPF OR BH0108.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          16-OCT-2001 (Rel. 40, Created)
16-OCT-2001 (Rel. 40, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
2-C-methyl-D-crythritol 2,4-cyclodiphosphate synthase (BC 4.6.1.12)
(MECPS) (MECDP-synthase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ISPF_
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; fifth step-similarity: BELONGS TO THE ISPF FAMILY.
                                                                    121
                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BACHD
                                                                                                                                                                                                                                                                        103;
                                                                                                                                    61
                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                      Isoprene biosynthesis; Complete proteome. CE 157 AA; 16751 MW; 0205862C7B69EA99
                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                      HPPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD
                                                                                                                                                                                                                   MIRVGMGYDVHRPNDGDHIIIGGYKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK
                                                                                                  LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                     MIRVGQGFDVHQFAEGRLLIIGGVEIPYEKGLLGHSDADVLLHTIADAALGAIGEGDIGK
                                                         LEABBAQVNVKATTTETLGFTGRGEGIASQAVILL
                                                                                                                                    HFPDTDPHFKDADSAKLLSAVWELVKEKGYTLGNVDCTIIAQKPKMAPHIPAMRARIAEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FROM N.A.
                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JCM 9153;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STANDARD;
                                                                                                                                                                                                                                                                                    66.55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Bacillales; Bacillaceae;
                                                                                                                                                                                                                                                                      16
                                                                                                                                                                                                                                                                    Score 520; DB 1;
Pred. No. 1.1e-41;
.6; Mismatches 36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            157 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            moved. Usage by and for commercial (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sasaki R.,
I., Kuhara S.
                                                                    155
                                                                                                                                                                                                                                                                      36; Indels
                                                                                                                                                                                                                                                                                                    Length 157;
                                                                                                                                                                                                                                                                                                                                        CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Masui
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a collaboration
                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                     120
                                                                                                                                                                                                                                       60
                                                                                                                                                                                                       60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              115
```

```
RESULT 15
ISPF_HAEDU
ID ISPF
AC Q4795
DT 30-M2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BB SOOR REPRESENTATION OF THE PROPERTY OF THE 
                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                           Q
                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local S
Matches 95
ISPF HABDU
Q47956;
30-MAY-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Tettelin H., Saunders N.J., Heidelberg J., Jeffries A.C., Nelson K.E., Eisen J.A., Ketchum K.A., Hood D.W., Peden J.F., Dodson R.J., Nelson W.C., Gwinn M.L., DeBoy R., Peterson J.D., Hickey E.K., Haft D.H., Salzberg S.L., White O., Fleischmann R.D., Dougherty B.A., Mason T., Ciecko A., Parksey D.S., Blair E., Cittone H., Clark E.B., Cotton M.D., Utterback T.R., Khouri H., Qin H., Vamathevan J., Gill J., Scarlato V., Masignani V., Pizza M., Grandi G., Sun L., Smith H.O., Praser C.M., Moxon E.R., Rappuoli R., Venter J.C.; "Complete genome sequence of Neisseria meningitidis serogroup B strain "CComplete genome sequence of Neisseria meningitidis serogroup B strain
                                                                                            HAEDU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HAMAP, MF 00107; -; 1.
InterPro; IPR003526; YgbB.
Pfam; PF02542; YgbB; 1.
TIGRPAMS; TIGR00151; ispF; 1.
PROSITE; PS01350; ISPF; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
STRAIN=MC58 / Serogroup
MEDLINE=20175755; PubMec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HAMAP; MF_00107;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL; AE002501;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Science 287:1809-1815(2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MC58."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Neisseriaceae; Neisseria.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Neisseria meningitidis (serogroup B).
Bacteria; Proteobacteria; Betaproteobacteria; Neisseriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2-C-methyl-D-erythritol 2,4-cyclodiphosphate synthase (BC 4.6.1.12)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FUNCTION: CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL 2-PHOSPHATE INTO 2C-METHYL-D-ERYTHRITOL 2,4-CYCLODIPHOSPHATE AND CMP. ALSO CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL INTO 2C-METHYL-D-ERYTHRITOL 3,4-CYCLOPHOSPHATE AND CMP (BY SIMILARITY). CATALYTIC ACTIVITY: 2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol = 2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SIMILARITY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; SIMILARITY: BELONGS TO THE ISPF FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OR NMB1512
                                                                                                                                                                                                                                                                           122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        G81073; G81073.
                                                                                                                                                                                                                                                                                                                                    64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NMB1512;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             95;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Isoprene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                  GIDISCVNIKGKTNEKLGYLGRMEGIEAQAAVLLVR
                                                                                                                                                                                                                                                                 BIDVDFINVKATTIEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                    FPDTDPNFKGADSRVLLRHVYGIYKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (MECDP-synthase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                       IRIGQGYDVHQLTEGRKLILGGVEIPFEKGLLGHSDADALLHAVTDALLGAAGLGDIGSH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IRVGMGYDVHRFNDGDHIILGGVKIPYBKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  meningitidis (serogroup
   Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ÃĀ.
                                                               STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            biosynthesis; Complete proteome.
AA; 17019 MW; 9C223BCED4D9BF3D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAF41868.1; -.
   .
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PubMed=10710307;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62.7%;
      Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 505;
Pred. No. 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                               160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 1;
2.9e-40;
                                                               ይ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 160;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         fifth step
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ?
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                    65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
```

Search completed: January Job time: 3.95645 secs

29,

2004,

15:50:41

```
밁
                                                   Ś
                                                                                                                            밁
                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                         片
                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SAN BERREAR SERVICE OF COCCOCCOCCOCCER SERVICE SERVICE
                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Palmer K.P., Munson R.S., Jr.;

Palmer K.P., Munson R.S., Jr.;

"Cloning and characterization of the genes encoding the hemolysin of Haemophilus ducreyi.";

Haemophilus ducreyi.";

Mol. Microbiol. 18:821-830(1995).

Mol. Microbiol. 18:821-830(1995).

PHOCTION: CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL 2-PHOSPHATE AND CMP. ALSO CONVERTS 4-DIPHOSPHOCYTIDYL-2C-METHYL-D-ERYTHRITOL INTO 2C-METHYL-D-ERYTHRITOL 3,4-CYCLOPHOSPHATE AND CMP (BY SIMILARITY).

-!- CATALYTIC ACTIVITY: 2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol = 2-C-methyl-D-erythritol 2,4-cyclodiphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Lyase; Is
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HAMAP; MF_00107; -; 1.
interPro; IPR003526; YgbB.
Pfam; PF02542; YgbB; 1.
TIGRPAMs; TIGR00151; ispF; 1.
PROSITE; PS01350; ISPF; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    30-MAY-2000 (Rel. 39, Last sequence update)
38-FEB-2003 (Rel. 41, Last annotation update)
2-C-methyl-D-erythritol 2,4-cyclodiphosphate synthase (BC 4.6.1.12)
(MECDP-synthase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=96422469; PubMed=8825086;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=730;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Bacteria; Proteobacteria;
Pasteurellaceae; Haemophi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Haemophilus ducreyi.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; fifth step SIMILARITY: BELONGS TO THE ISPF FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; U32175; AAC435
S70845; S70845.
121
                                                          121
                                                                                                                            5
                                                                                                                                                                                           61
                                                                                                                                                                                                                                                            4-3
                                                                                                                                                                                                                                                                                                                           μ
                                                                                                                                                                                                                                                                                                                                                                                            ; 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Isoprene
                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                             HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD 120
                                                                                                                                                                                                                                                                                                                           MIRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK 60
                                                                                                                            LFPDTDQQYKNIDSRKLLIEAYRQYQTKGYQISNIDITIIAQAPKMRPHIDNMRQLIAND
                                                          LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER
                                                                                                                                                                                                                                                            MIRIGHGFDVHAFGEKRPLIIGGVTIPYHTGFIAHSDGDVALHALTDALLGAAALGDIGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             160 AA;
                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAC43539.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         biosynthesis.
AA; 17437 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Haemophilus
                                                                                                                                                                                                                                                                                                                                                                                                                     62.4%;
63.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                            17;
                                                                                                                                                                                                                                                                                                                                                                                  Score 503; DB 1;
Pred. No. 4.5e-40;
L7; Mismatches 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             D7F1F2F518F7000E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 1; Length 160;
                                                                                                                                                                                                                                                                                                                                                                                         41;
                                                                 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pasteurellales;
                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a collaboration
                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                   120
                                                                                                                                                                                                                                                                60
```

```
Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                           No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                 Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                    Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SPTREMBL_23:*
: sp_archea:*
2: sp_bacteria:*
3: sp_humgi:*
4: sp_human:*
5: sp_invertebrate:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            January 29, 2004, 15:44:14; Search time 11.7026 Seconds (without alignments) 3461.979 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   830525 seqs, 258052604 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-941-947A-14
    \begin{array}{c} 70.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 \\ 6.6 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sp_mammal:*
sp_mhc:*
sp_organelle:*
sp_phage:*
sp_plant:*
sp_virus:*
sp_virus:*
sp_vertebrate:*
sp_vertebrate:*
sp_vertebrate:*
sp_vertebrate:*
sp_archeap:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Copyright
                                                                                                                                                                                                                                                                                                                                                                                                         Length DB
       GenCore version 5.1.6 (c) 1993 - 2004 Compugen Ltd.
       Q8EBR3
Q8EC5
Q8FC25
Q8FC46
Q8FC46
Q8F046
Q8F0A5
                                                                                                                                                                                                                                                                                                                                                                                                         Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        830525
                                                                Q8ebr3 shewanella
Q8dc59 vibrio vuln
Q8fej6 escherichia
Q8kc25 chlorobium
Q8g004 brucella su
Q8dbc4 synechococc
Q8f0a5 leptospira
Q8d224 wiggleswort
Q8rqp5 thermus the
Q8g512 bifidobacte
Q8g612 bifidobacte
Q8g614 corynebacte
Q8eua4 mycoplasma
Q8kx66 synechococc
                                                                                                                                                                                                                                                                                                                                                                                                    Description
Q8efr7 shewanella
Q8lbv9 arabidopsis
Q8p7z1 xanthomonas
```

ALIGNMENTS

Ş	8 W 9	RESULTION OF THE RESULT OF THE RESULTION OF THE RESULT OF THE
2 IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH 61	Query Match 70.6%; Score 569; DB 16; Length 159; Best Local Similarity 71.2%; Pred. No. 2.7e-45; Matches 111; Conservative 17; Mismatches 28; Indels 0; Gaps 0;	GEBR3 GE

```
RESULT 3
RESULT 3
RESULT 3
RESULT 0.4
RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT

QBDC59

ID QB

AC QBDC59

AC QBDC50

AC QBC50

AC QB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q8FEJ6;

01-MAR-2003 (TrEMBLrel. 2

01-MAR-2003 (TrEMBLrel. 2

01-MAR-2003 (TrEMBLrel. 2

2-C-methyl-D-erythritol 2

4.6.1.12).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q8DC59 PRBLIMINAKY; car, Q8DC59; Q8DC59; Q8DC59; Q8DC59; Q8DC59; Q7EMBLrel. 23, Created) 01-MAR-2003 (TrEMBLrel. 23, Last sequence update) 01-MAR-2003 (TrEMBLrel. 23, Last annotation update) 2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Complete SEQUENCE
                                           STRAIN=O6:H1 / CFT073 / ATCC 700928;

MEDLINE=22388234; PubMed=12471157;

Welch R.A., Burland V., Plunkett G. III, Redford P., Roesch
Rasko D., Buckles E.L., Liou S.-R., Boutin A., Hackett J.,
Mayhew G.F., Rose D.J., Zhou S., Schwartz D.C., Perna N.T.,
                                                                                                                                                                                                                                                                                                                  Escherichia coli 06.
Bacteria; Proteobacteria;
Enterobacteriaceae; Esche
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL;
                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Rhee J.H., Kim S.Y.,
Choy H.E.;
                                                                                                                                                                                                                                                                                         NCBI_TaxID=217992;
                                                                                                                                                                                                                                                                                                                                                                                                                              YGBB OR C3313.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q8F3J6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRAIN=CMCP6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteria; Proteobacteria; Vibrionaceae; Vibrio.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Vibrio vulnificus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=672;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      lete genome sequence of Vibrio vulnificus tted (DEC-2002) to the EMBL/GenBank/DDBJ dAE016802; AAO10006.1; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   107;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  щ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ۱...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LETDIRNINVKATTTERLGFTGRKEGIATEAVVLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MIRIGHGFDVHKFGGEGPVIIGGVAVPYEQGLIAHSDGDVALHALSDALLGAIAAGDIGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MIRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HFPDTDDKWKGVDSRELLKDVYRRVKEQGYKLGNADV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NADVADINVKATTTEKLGFTGRKEGIAVEAVVLLSR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PPDTDAAYKGADSRVLLRHCYALAKAKGFELGNLDVTIIAQAPKMAPHIEDMRQVLAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PROTORNEKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQARKMLRHVPGMRANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IRIGHGFDVHKFGEPRPLILCGVEVPYETGLVAHSDGDVVLHAISDAILGAMALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            158 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         17084 MW;
                                                                                                                                                                                                                                                                                                                         teria; Gammaproteobacteria;
Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    68.4%;
69.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Chung
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        23, Created)23, Last sequence update)23, Last annotation update)2,4-cyclodiphosphate synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gammaproteobacteria; Vibrionales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S.S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 551; DB 16;
Pred. No. 1.3e-43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OB888FE050160112 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Kin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           J.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Moon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       , 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VTI IAQAPKMAPYIDAMREAIAHD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       157
                                                                                                                                                                                                                                                                                                                                                             Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CMCP6.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ү.н.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                   Roesch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Jeong
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (B)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        158;
                                                                                  Stroud
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Η.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                  .
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62
```

```
유
                                                                                                                                                                                                                                                                                                     RESULT OF SECURITY OF SECURITY
  밁
                                S
                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SERERE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local S
Matches 107
                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                              Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bisen J.A., Nelson K.B., Paulsen I.T., Heidelberg J.F., Wu M., Dodson R.J., Debby R., Gwinn M.L., Nelson W.C., Haft D.H., Hickey B.K., Peterson J.D., Durkin A.S., Kolonay J.L., Yang F., Holt I., Umayam L.A., Mason T., Brenner M., Shea T.P., Parksey I Wierman W.C., Feldblyum T.V., Hansen C.L., Craven M.B., Radune I Vamathevan J., Khouri H., White O., Gruber T.M., Ketchum K.A., Venter J.C., Tettelin H., Bryant D.A., Fraser C.M.; "The complete genome sequence of Chlorobium tepidum TLS, a photosynthetic, anaerobic, green-sulfur bacterium."; proc. Natl. Acad. Sci. U.S.A. 99:9509-9514(2002).

EMBL; AB012915; AAM72826.1; -.
                                                                                                                                                                                                                                                                                                        Complete
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-OCT-2002 (TrEMBLrel. 22, Created)
01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase.
ISSF OR CTIGO1.
Chlorobium tepidum.
Bacteria; Chlorobi; Chlorobia; Chlorobiales; Chlorobi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q8KC25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mobley H.L.T., Donnenberg M.S., Blattner F.R.;
"Extensive mosaic structure revealed by the complete
of uropathogenic Escherichia coli.";
Proc. Natl. Acad. Sci. U.S.A. 99:17020-17024 (2002).
EMBL; AE016765; AAN81762.1;
Lyase; Complete proteome.
Lyase; Complete proteome.
SEQUENCE 159 AA; 16867 MW; 8FD4573623BA4549 CRC64
                                                                                                                                                                                                                                                                                                                                                      Pfam; PF02542; YgbB; 1.
TIGRFAMs; TIGR00151; ispF;
PROSITE; PS01350; ISPF; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
STRAIN=TLS / ATCC 49652 / DSM 12025;
MEDLINE=22103685; PubMed=12093901;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=1097;
                                                                                                                                                                                                                                                                                                                                                                                                                                        interPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ,4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             107;
  61
                                                   62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62
                                                                                                                                                  N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N
                                                                                                                                                                                                                                                                                                     proteome.
157 AA;
                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                            FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVFGMRANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MRIGHGFDVHAFGGEGPIIIGGVRIPYEKGLLAHSDGDVALHALTDALLGAAALGDIGKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCHMDDVNVKATTTEKLGFTGRGEGIACEAVALL
PPDTSPDYKDADSMELLRHVCKLLEQEGYKPVNVDTMLLLEKPKIAPYIDQMRRNIARCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FPDTDPAFKGADSRELLREAWRRIQAKGYALGNVDVTIIAQAPKKLPHIPQMRVFIAEDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKKLPHVPGKRANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IRVGMGYDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                     IPR003526;
                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRELIMINARY;
                                                                                                                                                                                                                                                                                                        16923 MW;
                                                                                                                                                                                                      56.2%; Score 453; DB 16; 54.2%; Pred. No. 1.8e-34; tive 33; Mismatches 38;
                                                                                                                                                                                                                                                                                                                                                                                                                                     YgbB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  66.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 537; DB 16;
Pred. No. 2.6e-42;
4; Mismatches 33;
                                                                                                                                                                                                                                                                                                        4FA5A7DCB20C8B7B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Chlorobiaceae;
                                                                                                                                                                                                         38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ω
•
                                                                                                                                                                                                                                                                                                             CRC64:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CRC64;
                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            genome sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                159;
                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ם ם
                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
  120
                                                      121
                                                                                                       60
                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60
                                                                                                                                                                                                         0
```

```
RASULT 6
Q8DHC4
ID Q8DH
AC Q8DH
AC Q8DH
DT 01-M
DT 01-M
DT 01-M
DT 01-M
DT 01-M
DT 01-M
DT 1-C-
GN TLR2-
GN TLR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          よ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   뮍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local S
Matches 79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.

STRAIN=1330 / Biovar 1;

MEDLINE=22247741; PubMed=12271122;

MEDLINE=22247741; PubMed=12271122;

Paulsen I.T., Seshadri R., Nelson K.E., Eisen J.A., Heidelberg J.F.

Paulsen I.T., Seshadri R., Nelson K.E., Sinkac L.M., Beanan M.J.,

Read T.D., Dodson R.J., Umayam L., Brinkac L.M., Beanan M.J.,

Daugherty S.C., Deboy R.T., Durkin A.S., Kolonay J.F., Madupu R.,

Nelson W.C., Ayodeji B., Kraul M., Shetty J., Malek J., Van Aken S.

Riedmuller S., Tettelin H., Gill S.R., White O., Salzberg S.L.,

Riedmuller S., Indler L.B., Halling S.M., Boyle S.M., Fraser C.M.,

"The Brucella suis genome reveals fundamental similarities between
MEDLINE=2225144; PubMed=12240834; Neuchi M., Katoh H., Sasamoto Nakamura Y., Kaneko T., Sato S., Ikeuchi M., Katoh H., Sasamoto Watanabe A., Iriquchi M., Kawashima K., Kimura T., Kishida Y., Kiyokawa C., Kohara M., Matsumoto M., Matsuno A., Nakazaki N.,
                                                                                                                                                                                                                                                            Synechococcus elongatus (Thermosynechococcus elongatus). Bacteria; Cyanobacteria; Chroococcales; Synechococcus.
                                                                                                                                                                                                                                                                                                                                               01-MAR-2003 (TrEMBLrel. 23, Created)
01-MAR-2003 (TrEMBLrel. 23, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
2-C-methyl-D-erythritol 2,4-cyclodiphosphate syntha
                                                                                                                                                                                                                                                                                                                                                                                                                                              Q8DHC4;
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Complete proteome. SEQUENCE 451 AA;
                                                                                                                                   STRAIN-BP-
                                                                                                                                                                    SEQUENCE
                                                                                                                                                                                                                                                                                                                           TLR2035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QBDHC4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TIGR; BR1120; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-MAR-2003 (TIEMBLIFE). 23, Last sequence update)
01-MAR-2003 (TIEMBLIFE). 23, Last amnotation update)
2C-methyl-D-erythritol 2,4-cyclodiphosphate
synthase/4-diphosphocytidyl-2C-methyl-D-erythritol synthase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=29461;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Brucellaceae; Brucella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q8G0H4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q8G0H4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteria; Proteobacteria; Alphaproteobacteria; Rhizobiales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Brucella suis.
                                                                                                                                                                                                                            eria; Cyanobacteria;
_TaxID=32046;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               l and plant pathogens and symbionts.";
Natl. Acad. Sci. U.S.A. 99:13148-13153(2002).
AE014413; AAN30040.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                79; Conserv
                                                                                                                                                                FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GIAADRVSIKATTNEKLGFVGRREGIAAIATATV 443
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLI 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PPPSDSQWKGAASRIFIEHAAKIVREAGGRIANVDVTLISEAPKIGPHRAAMTQALCDML
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGKRANIAADL 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IRTGNGYDVHSFEPGDHVTLCGVKIPHEAKLNGHSDADVALHALTDALLATRGAGDIGTH 349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IRVGMGYDVHRENDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GLEINAVSVKATTNEKLGYVGRQEGACAHAVCLIE 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   48492 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         50.4%; Score 406; DB 16;
51.3%; Pred. No. 1.7e-29;
tive 20; Mismatches 55
                                                                                                                                                                                                                                                      Chroococcales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3BDB7285C056A161 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         451
                                                                                                                                                                                                                                                      Synechococcus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         P
                                                                                                                                                                                                                                                                                                                                               synthase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 451;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            J.8.,
```

```
RESULT 8
Q8D224
ID Q8D22
AC Q8D2
DT 01-M
DT 01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 7
Q8F0A5
ID Q8F0A5
ID 01-M
DT 01-M
DT 01-M
DT 01-M
DT Y9bB
GN Y9bB
OS Lept
OC NCBI
RN [1]
RN [1]
RN [1]
RN SEQU
RC STRA
RA Ren
DR RAD
RA Ren
RL SUBM
                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                   ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SZRFRRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-MAR-2003
01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Submitted (MAR-2002) to the EMBL/GenBank/DDBJ databases EMBL; AE011514; AANS0789.1; -. Complete proteome. Complete proteome. SEQUENCE 161 AA; 17651 MW; 625A49B3223D22C9 CRC64;
                                                                                                                                                                                     Q8D224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRAIN=56601 / Serogroup Icterohaemorrhagiae /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; AP005376; BAC09587.1; -.
Complete proteome.
SEQUENCE 161 AA; 17323 MW; CA4C67BB6D02498D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Shimpo S., Sugimoto M., Takeuchi C., Yamada M., "Complete genome structure of the thermophilic of Thermosynechococcus elongatus BP-1.", DNA Res. 9:123-130(2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=173;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bacteria; Spirochaetes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Leptospira interrogans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          YGBB family protein.
YGBB OR LA3591.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qaroas;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QBF0A5
                                                                                                                                                                                                                                                                                                                                                                  119
                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    122
                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ۳
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            μ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                   NLLNLPLDCISVKATTTEKMGALGROEGIGTFCSILLEK
                                                                                                                                                                                                                                                                                                                                                    ADLETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                      GOYFPDTDPSLKNIDSKIILVKCLELMKEKNFDLVNIDCTVIGERPKITPLKDRITKSLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GKHFPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTI IAQAPKMLPHVPGMRANIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MYRIGNGIDFHKLEINLNRPLILGGIECESEFALVGHSDADIILHAISDAILGALALGDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MIRVGMGYDVHR--FNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GIDRDQISIKATTNEKLGPVGREEGIAAYAVALLQ 158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ETDVDFINVKATTTEKLGFEGRKEGIAVQAVVLIB 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FPPSDPQWAGADSQVLLAKVAALIAERGWRVGNIDAVVVAERPKLKPYLDPMRDRLATTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IRVGMGYDVHRPNDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FPDTDPNFKGADSRVLLRHYYGIVKEKGYKLVNADVTIIAQAPKWLPHVPGWRANIAADL 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IRIGNGYDIHRLVPERPLILGGIRLEHACGLLGHSDADVLTHAIMDALLGALSLGDIGHY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (TrEMBLiel.) (TrEMBLiel.) (TremBLiel.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                     PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRELIMENARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          45.08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      48.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Spirochaetales; Leptospiraceae; Leptospira.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              33; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 363; DB 16;
Pred. No. 4.5e-26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 394; DB 16;
Pred. No. 5.8e-29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                     157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 16;
                                                                                                                                                                                  B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ß
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Serovar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               cyanobacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 161;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 161;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ٧,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        118
                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63
```

Q8D224; 01-MAR-2003 01-MAR-2003 01-MAR-2003

(Trambliel. (Trambliel. (Trambliel.

23,

Created)

Last sequence update)
Last annotation updat

update)

Wigglesworthia YgbB protein.

brevipalpis

```
RESULT OR PROPS

ID BROPS

ID BROPS

OC OF TO 01

OT 01

O
d
                                    8
                                                                                  В'n
                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local S
Matches 71
                                                                                                                                                                        Matches
                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             OBROPS PRELIMINARY,
OBROPS,
O1-JUN-2002 (TrEMBLrel.
O1-JUN-2002 (TrEMBLrel.
O1-OCT-2002 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (1)
SEQUENCE FROM N.A.
MEDLINE=22297718; PubMed=12219091;
MEDLINE=22297718; PubMed=12219091;
                                                                                                                                                                                                                                                                                                                                                                                                                              Yokoyama S., Tame J.R., Park S.;
"2-C-methyl-D-erythritol 2,4-cyclodiphosphate
thermophilus HB8.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Kishida H., Wada T., Un
Yokoyama S., Tame J.R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2-C-methyl-D-erythritol (EC 4.6.1.12).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   flies, Wigglesworthia glossinidia.", Nat. Genet. 32:402-407(2002).
EMBL; AB063522; BAC24677.1; -.
                                                                                                                                                                                                                                                                                                                                                                                     Submitted (MAR-2002) to the EMBL/GenBank/DDBJ EMBL; AB082126; BAB86885.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Thermus thermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Complete proteome. SEQUENCE 157 AA;
                                                                                                                                                                                                                                                                                               PROSITE;
                                                                                                                                                                                                                                                                                                                        TIGRFAMS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRAIN-HB8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=274;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacteria; Deinococcus-Thermus;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         YGBB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Aksoy
                                                                                                                                                                                                                                                          SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Thermus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Genome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=164609;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Enterobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                 PF02542; YgbB; 1.
PF02542; YgbB; 1.
AMS; TIGR00151; ispF; 1.
                                           62
  19
                                                                                                                                                                    61;
                                                                                    μ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N
                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sequence of the endocellular obligate
                                                                                                           IRVGMGYDVHRENDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH
                                                                                                                                                                                                                                                                                                 PS01350; ISPF;
                                                                                    MRIGYGEDSHRLEEGRPLYL
FPDTDPRWRGERSEVFLREALRIVEARGAKLIQASIVLTLDRPKLGPHRKALVDSLSRLL
                                      FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IKCKTDVÍNIKSKTMEGÍGEIGKKKGIÁSEAVSVILE 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LETDVDFINVKATTTEKLGFEGRKEGIAVQAV-VLIE 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LEPNNDIKYKNINSCILLQVVWNCIKKK-YKIGNIDVTLELEYPKISSYTNKICLCISNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HEPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MRVGHGFDIHXFGKIYKPLILGGVHIPYCXGVVSHSDGDVIHSIIDSLLGASSLGDIGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IRVGMGYDVHRFND-GDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGK
                                                                                                                                                                                                                                                          152 AA;
                                                                                                                                                                    33.7%;
ilarity 39.4%;
Conservative 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              157 AA; 17252 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            40.9%; llarity 45.2%; Conservative 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRELIMINARY;
                                                                                                                                                                                                                                                        16520 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Wigglesworthia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Unzai
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Park S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           21, Created)
21, Last sequence update)
22, Last annotation update)
2,4-cyclodiphoshate synthase
                                                                                                                                                                    25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 329.5; DB 1
Pred. No. 5.8e-23;
7; Mismatches 46
                                                                                                                                                                    Score 272; DB 2;
Pred. No. 1.3e-17;
5; Mismatches 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRT;
                                                                                                                                                                                                                                                        0114C0E440DC28F3 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kuzuyama T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Deinococci;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              775DCB1DDAE2884A CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Oshima K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ጅ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Thermales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 16;
                                                                                                                                                                    65
7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Terada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            46;
                                                                                                                                                                                                                                                                                                                                                                                                          databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                 synthase from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       symbiont
                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Shiba
                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Thermaceae;
                                                                                                                                                                                                               152;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Shirouzu M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ŏ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        157;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       tsetse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Hattori
                                                                                                                                                                    4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Thermus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            بى
--
                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 119
                                         121
                                                                                  60
                                                                                                                           5
120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60
```

```
RESULT 11
Q8FMI4
ID Q8FMI
AC Q8FMI
AC Q8FMI
DT 01-MA
DT 01-MA
DT 01-MA
DT 01-MA
CCOLSe
GN CCCCYN
OC COLYN
OC COLYN
OX NCBI
RN SEQUE
RA IKeo
RA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 10
Q8G5L
Q8G5L
AC Q8G5L
DT 01-MAD
DT 01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q8FWI4 PRELIMINARY; PRT; 171 AA.

Q8FWI4; PREMBLrel. 23, Created)
01-MAR-2003 (TrEMBLrel. 23, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
"The entire genomic sequence of Corynebacterium Submitted (MAY-2002) to the EMBL/GenBank/DDBJ da EMBL; AP005222; EAC19330.1; -.
                                                                                                                                SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
STRAIN-YS-314 / AJ 12310 / DSM 44549 / JCM 11189;
KAWATEDBAYASI Y., Yamazaki J., Hino Y., Kikuchi H.,
Kawatenbayasi Y., Yamazaki J., Itoh T., Yamagishi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "The genome sequence or representational tract."; to the human gastrointestinal tract."; proc. Natl. Acad. Sci. U.S.A. 99:14422-14427(2002) EMBL; AE014722; AAN24805.1; -.
                                                                                                             Kawarabayasi Y., Yamazaki J.
Ikeo K., Suzuki M., Mashima
Usuda Y., Sugimoto S.;
                                                                                                                                                                                                                                                                                                                                                                      Bacteria; Actinobacteria; Actinobacteri
Corynebacterineae; Corynebacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conserved hypothetical protein. CE2520.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bifidobacterium longum.
Bacteria; Actinobacteria; Actinobacteridae;
Bifidobacteriaceae; Bifidobacterium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                Corymebacterium efficiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Schell M.A., Karmirantzou
Pessi G., Zwahlen M.-C., I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A. STRAIN=NCC 2705;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mecdp-synthase.
ISPF OR BL0997.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-MAR-2003 (TrEMBLrel.
01-MAR-2003 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QBG5L2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QBG5L2
                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=152794;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pridmore R.D., Arigoni
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2-C-methyl-D-erythritol
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NCBI_TaxID=216816;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WEDLINE=22294977; PubMed=12381787;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MLPHVPGMRANIAADLETDVDF-INVKATTTEKLGFEGRKEGIAVQAVVLIER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      proteome.
174 AA; 17433 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DALLAAARLGDIGSLFGVGADAHGAGMHGIDMLQEVVAHLASNGYTPASASVAIIGNRPK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DAILGAAALGDIGKHF-PDTDPNFKGADSRVLLRHYYGIVKEKGYKLVNADVTIIAQAPK 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VLIGQGFDAHRFAPAGSGRELWIAGLYWPVPDSCSEADAAKYE-GIEGDSDGDVAAHALI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IRVGMGYDVHRF----NDGDHIILGGVKIP-----YEKGLEAHSDGDVVLHALA 46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RLPQDRIGLTFKTSEGLA----PSHVQARAVVLLD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ETDVDFINVKATTTEKLGFEGRK3GIAVQAVVLIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -IGTRRAEAEAALSAAVGCPVSVTATTTDHMGFTGHGEGIAAIANALVEK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             28.4%; Score 229; DB 16; 37.0%; Pred. No. 1.6e-13;

    Created)
    Last sequence update)
    Last annotation update)
    Last annotation synthase,

                                                                                                                 19 J., .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            u M., Snel B., Vil
Desiere F., Bork
                                                                                                                                                                                                                                                                                                                                                                                                             Actinobacteridae; Actinomycetales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          F024066B3DEB3C6B CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                              Corynebacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Vilanova D., 1
ork P., Delley
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     longum reflects
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bifidobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          67;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         156
                                              databases
                                                                                 efficiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                       Nakamura
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Berger
y M.,
                                                                                                                                                        Nishio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mecps,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    174;
                                                                                 YS-314.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Β.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              22;
                                                                                                                                                    ξ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
```

60

```
QBKX06
ID QBKX0
AC QBKX0
AC QBKX0
DT 01-OC
DT 01-MA
DB 2C-me
GN SLR1
OC Synec
OC Bacte
                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT
QBEUA4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                  QBKX06 PRELIMINARY; PRT; 89 AA.
QBKX06;
QBCX06;
QBCX06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q8EUA4;
  Bacteria;
                              Synechococcus sp.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE-22354719; PubMed-12466555; Sasaki Y., Ishikawe J., Yamashita A., Oshima Yoshino C., Horino A., Shiba T., Sasaki T., H "The complete genomic sequence of Mycoplasma intracellular bacterial pathogen in humans."; Nucleic Acids Res. 30:5293-5300(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-MAR-2003 (TremBLrel. 23,
01-MAR-2003 (TremBLrel. 23,
01-MAR-2003 (TremBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN=HF-2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-MAR-2003 (TrEMBLrel. 23, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
01-MAR-2003 (TremBLrel. 23, Last sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL; AP004174; BAC44812.1; -. Complete proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacteria; Firmicutes; Mollicutes; Mycoplasmataceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mycoplasma penetrans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hypothetical protein; Complete proteome. SEQUENCE 171 AA; 18076 MW; 524D47207A0856E7 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                    131
                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    134 SDILGAPCFLS -- ATTTDHMGFTGRGEGRAALATAVV 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                         77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3 RVGMGYDVHRENDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKHF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                    NLEKLENNTEISLKATR----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RVGMGYDVHRF-NDGDHIILGGVKIPYEKGLEAHSDGDVVLHALADAILGAAALGDIGKH 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GVGRPEYDGVSGTQLLIEVRELLITRGFTIGNVAAQLVGQTPKF----
                                                                                                                                                                                                                                                                                                                                                                                                 DIETDVD--FINVKATTTEKLGFEGRKEGIAVQAVVLIER 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FPDTDPNFKGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHV--PGMRANIAA 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KIGNGIDIHKIKKEKCKQRLAGLDFELDYKIIAHSDGDIILHSISSAILGALSLQDLGTY 76
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         POTDPNFKGADSRVILLRHVYGIVKBKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RVGIASDAHQIEAGKPCWIACLLFDGVDGCEGHSDGDVVAHAIVDALLSASGLGDLGSFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                      FSDTDSKNKNLDSLEILSMCLNELKKQDYSISNVDITIICE-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TDV----DFINVKATTTEXLGFEGRKEGIAVQAVVLI
  Cyanobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 165 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRELIMINARY;
                         (strain PCC 7002) (Agmenellum quadruplicatum)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19038 MW; C6851C7B8FFBC5C4 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               24.1%;
31.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               25.9%;
     Chroccoccales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 194; DB 16;
Pred. No. 2.7e-10;
6; Mismatches 57;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 208.5;
Pred. No. 1.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1.2e-11
  Synechococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                £,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A K., Kenri T.,
Hattori M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ×.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   57;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             penetrans,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mycoplasma
                                                                              (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               햠
                                                                                                                                                                                                                                                                                                                                                                                                                                                         VIIFKDIKDQIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -GPRREEAQQVI 133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Furuya
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ×.
                                                                                                                                                                                                                                                                                                                                                                                                                                                      130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ω,
                                                                                                                                                                                                                                                                                                                                      RESULT 14
QBEFR7
IDE QBEFR7
QBEFR7
DT 01-MA
DT 01-MA
DT 01-MA
DT 01-MB
COMME
GN SO18:
OC Bact
OC Alte
CN NCBI
RP SEQUENT
OC ALTE
RN HEID
RP SEQUENT
RA HEED
RA MED
RA MA
                                                                      á
                                                                                                                              Вb
                            밁
                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           吊
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
Matches 37
                                                                                                                                                                                                                                                               Query Match
Best Local (
                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Heidelberg J.F., Paulsen I.T., Nelson K.B., Gaidos B.J., Nelson W.C., Read T.D., Bisen J.A., Seshadri R., Ward N., Methe B., Clayton R.A., Meyer T., Tsapin A., Scott J., Beanam M., Brinkac L., Daugherty S., DeBoy R.T., Dodson R.J., Durkin A.S., Haft D.H., Kolonay J.F., Madupu R., Peterson J.D., Umayam L.A., White O., Wolf A.M., Vanathevan J., Weidman J., Impraim M., Lee K., Berry K., Lee C., Weiller J., Khouri H., Gill J., Utterback T.R., McDonald L.A., Feldblyum T.V., Smith H.O., Venter J.C., Nealson K.H., Fraser C.M., "Genome sequence of the dissimilatory metal ion-reducing bacterium Shewanella oneidensis."
                                                                                                                                                                                                                                                                                                                                              SEQUENCE 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QSEFR7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Nomura C.T., Persson S., Zhao J., Bryant D.A.;
"An Analysis of Forty Genes Encoding Electron Transport Proteins from
Synechococcus sp. PCC 7002: A Comparative Study of Electron Transport
Proteins from Cyanobacteria and Chloroplasts.";
Submitted (MAY-2001) to the EMBL/GenBank/DDBJ databases.
EMBL; AF381048; AAN03587.1;
                                                                                                                                                                                                                                                                                                                                                                                                   TIGE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-MAR-2003 (TrEMBLrel. 23, Created)
01-MAR-2003 (TrEMBLrel. 23, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation updat
01-MAR-2003 (TrEMBLrel. 23, Last annotation updat
Conserved hypothetical protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Nat. Biotechnol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=22297686; PubMed=12368813;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Shewanella oneidensis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NCBI_TaxID=70863;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alteromonadaceae; Shewanella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SO1899.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QBEFR7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TIGREAMS; TIGRO0151; ispF; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro; IPR003526; YgbB. Pfam; PF02542; YgbB; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NON TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=32049;
                            198
                                                                                                                                 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 130
                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                   SO1899;
                                                                                                                                                                                                                                                                                                                                                                                                                          AE015633; AAN54951.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         70
                                                                                                                                                                                   œ
                                                                                                                                                                                                                                         . Similarity
35; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      щ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 Similarity
37; Conser
                            YHQLKQYLAHYKDLAARYPFTTIPYTEVIKPGTTSPSIKGIAAR
                                                                                                                                 YAIHLLNGKVNPSMLGKTWNYD---EAHLDFDTTLKQLEEHIKAHTVAEAINGLAPKITP
                                                                                                                                                                                   YDVHRFNDGDHIILGGVKIPYEKGLEAHSDGDVVL------HALADAILGAAA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VKATTNEKLDAMGBEKGI CVHAVALL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VKATTTEKLGFEGRKEGIAVQAVVLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KGADSIELLKQVHQLIQERGWQIGNIDSVIVAERPKLKSHIQAMTQCLAEALGVDPDQVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KGADSRVLLRHVYGIVKEKGYKLVNADVTIIAQAPKMLPHVPGMRANIAADLETDVDFIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FROM N.A.
                                                                                                                                                                                                                                                                                                                                           ll protein; Complete
571 AA; 64713 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 89 AA; 9626 MW;
                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                20:1118-1123 (2002).
                                                                              -IGDIGKHPP-
                                                                                                                                                                                                                                                               10.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               22.3%;
43.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gammaproteobacteria; Alteromonadales;
                                                                                                                                                                                                                                      17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      18;
                                                                                                                                                                                                                                                               Score 87.5;
Pred. No. 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 180; DB 2;
Pred. No. 2.4e-09;
8; Mismatches 31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7E5534DC1BF1CE09 CRC64;
                                                                                                                                                                                                                                                                                                                                           proteome.
86E9246E7680D81E CRC64;
                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          571
                                                                           --DTDPNFKGADSRVLLRHVYGIVKEKGYK
                                                                                                                                                                                                                                                                                         83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            update)
                                                                                                                                                                                                                                                                                         16;
                                                                                                                                                                                                                                         39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 89
                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
```

51;

Gaps

9

91 197 5.4 4.

S

92 LVNA---DYTIIAQAPKMLPHV 110

```
RESULT 15

OBLBV9

ID OBLBV

AC OBLBV

DT 01-OC

DC NUCBI

RN [1]

RN [2]

RN [2]

RN [2]

RN [2]

RN Feldm

RT Genom

RI Inter

DR PRINT

DR PRIN
Search completed: January 29,
Job time : 13.7026 secs
                                                                                                                                                    밁
                                                                                                                                                                                                                    Ś
                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                             5
                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ફ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Fellmann A.;

Full-length cDNA from Arabidopsis thaliana.*;

Submitted (MAR-2002) to the EMBL/GenBank/DDBJ databases.

-!- COFACTOR: FAD (BY SIMILARITY).

REMBL; AV086968; AAM64531.1; -.

RINTEFFO; IPR001327; FAD pyr redox.

InterPro; IPR001327; FAD pyr redox.

InterPro; IPR001100; Pyr redox.

RINTEFFO; IPR001100; Pyr redox.

RPINTS; PR00469; PYR PROMASEI.

RPRINTS; PR00469; PADPNR.

RPRINTS; PR00469; PADPOTASEII.

RPRINTS; PR00469; PADPOTASEII.

RPRINTS; PR00411; ONDEDTASEII.

RPRINTS; PR00411; ONDEDTASEII.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local S
Matches 50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OSLBV9 PRELIMINARY; PRT; 434 AA.

OSLBV9;
OSLBV9;
O1-CCT-2002 (TrEMBLrel. 22, Created)
O1-CCT-2002 (TrEMBLrel. 22, Last sequence update)
O1-ARR-2003 (TrEMBLrel. 22, Last annotation update)
O1-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Monodehydroascorbate reductase (NADH)-like protein.
Arabidopsis thaliana (Mouse-ear cress).
Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eurosids I; Brassicales; Brassicaceae; Arabidopsis.
NCSI TaxID=3702;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
Haas B.J., Volfovsky N., Town C.D., Troukhan M., Alexandrov N., Feldmann K.A., Flavell R.B., White O., Salzberg S.L.;
"Full-length messenger RNA sequences greatly improve genome annotation.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
Brover V., Troukhan M., Alexandrov N., Lu Y.-P.,
Feldmann K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Genome Biol. 0:0-0(2002).
                                                                                                                                                250 LEADIVI 256
                                                                                                                                                                                                                        149 VQAVVLI 155
                                                                                                                                                                                                                                                                                                192 VFPEPWCMPRL--FTANIAAFYETYYTNKGVKIIKGTVASGFTAQPNGEVKEVQLKDGRT 249
                                                                                                                                                                                                                                                                                                                                                     100 IAQAPKMLPHVPGWRANIAADLETDVDFINVKATT-TEKLGPEGR------KEGIA 148
                                                                                                                                                                                                                                                                                                                                                                                                                                                 132 FGVKGADSKNILYLREIDDADKLVEAIKAKKGGKAVVVGGGYIGLELSAVLRINNLDVTM 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   249 DANATVQDATLVANAFLLYDNI 270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 67 PNFKGADSRVLL------RHYYGIVKEKGYKLV------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             73 GGEKILPESYKQKGIELILSTEIVKADLSAKSL-VSATGDVFKYQTLIIATGSTVLRLTD 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              22 GGVKIPYE----KGLEAHSDGDVVLHALADAILGAAALGDIGKH-----FPDTD 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
50; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  10.7%; Score 86; DB 10; Length 434; 26.7%; Pred. No. 11; tive 22; Mismatches 59; Indels
                            2004, 15:54:10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Flavell R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ---NADVTI 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
```

Copyright

GenCore version 5.1.6 (c) 1993 - 2004 Compugen Ltd.

¢*

```
Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BLOSUM62
Gapop 10:0 ,
                222224444444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 MTKFIFITGGVVSSLGKGIA......HALFSGFVEAAAKHKTQGTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 January 29, 2004, 15:40:33 ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1107863 seqs, 158726573 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-941-947A-16
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA200.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA200.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA200.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA200.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA200.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA200.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA200.DAT:
                                                                                                                                                                                                                                                                                                                                                                                                                                               Geneseg 19Jun03:*

/SIDS1/gcgdata/geneseg/genesegp-emb1/AA1980.DAT:*
/SIDS1/gcgdata/geneseg/genesegp-emb1/AA1981.DAT:*
/SIDS1/gcgdata/geneseg/genesegp-emb1/AA1982.DAT:*
/SIDS1/gcgdata/geneseg/genesegp-emb1/AA1983.DAT:*
/SIDS1/gcgdata/geneseg/genesegp-emb1/AA1984.DAT:*
/SIDS1/gcgdata/geneseg/genesegp-emb1/AA1985.DAT:*
/SIDS1/gcgdata/geneseg/genesegp-emb1/AA1986.DAT:*
/SIDS1/gcgdata/geneseg/genesegp-emb1/AA1986.DAT:*
                                                                                                                                                                                                                                                                                                                                                                        /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1987.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1989.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1989.DAT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           / Search time 49.7262 Seconds
(without alignments)
1736.455 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1107863
```

Pred. No. is the number of results predicted by chance to h score greater than or equal to the score of the result bein and is derived by analysis of the total score distribution. being to have printed,

Result No.	(O	Query Match Length DB	ength	DB	ID	Description
1	2788	100.0	544	23	ABG61585	High growth methan
N	2788	100.0	544	23	AAE22306	Methylomonas 16a s
بر)	2788	100.0	544	23	AAU80330	Methylomonas 16a O
4	2008	72.0	542	22	AAU36340	Pseudomonas aerugi
ۍ.	1916	68.7	54 5	22	AAU34682	E. coli cellular p
6	1908.5	68.5	545	22	AAU35582	Haemophilus influe
7	1889.5	67.8	544	24	ABP76969	N. gonorrhoeae ami
œ	1783	64.0	511	22	AAU38272	Salmonella typhi c
9	1622.5	58.2	535	12	AAR15642	CTP synthetase. B

WPI; 2002-452200/48

Farvar Arabitich	ABG/003	J K	\sim	•		J1 H
osophila	ABB661	7 22	n 60	4. 2. 5. 5.	1186.5	ĸω
-	AAB9467	N	œ			N
7	ABR4	N	ω	•		,
n protein	AAB9563	N	œ	•		U
dopsis	AAG2926	K)	u			C)
Mouse ischaemic	ABB5717	N	o		1261.5	œ)
adops	AAG3711	М	ω	•	1288	7
Lactococcus la	AAU0043	ы	\mathbf{r}	٠	1331	υı
Arabidopsis th	AAG1810	K)	U		1332	U)
Protein involv	AAY3702	N)	w	٠	1338	H2
2000	AAU0043	N	-	•	1351	w
۳.	AAY3482	K)	w	٠	1355.5	N
Corynebacterium	AAB8013	N1	ஶ	•	_	P4
C glutamicum p		N	ហ		1372	ت
Lactococcus la		K)	w	•	1378	w
H. pylori cytoplas		lest	u	•	1418	w
Lactococcus la		N)	w	•	1428	~)
Bifidobacteriu		K1	ŧл		1432.5	σı
ctococc	3 ABB53799	N	w	•	1434	U
Helicobacter p		K3	w		1444.5	47
Streptococcus		N)	w	•	1502	
Propionibacter		K)	m		1510	10
Streptococcus poly		K)	w		1532	
tative P. a		K)	u		1555.5	C
reptococcı		.	u		1561	ω
			ü		1562	ယ
reptococcus		.,	u		1562	7
erococcus f		6 1	w		1569	Ω,
3		.	w		1569	UI
r		. .	į.		1575	,p.
S. epidermidis	AAG819		(4)		1575	ω
taphylo	AAU373		(4)		1576	-1/2
aphyloc	AAU3	.	(4)		1576	ļ~,
Tacer	100000	,	₹	٠	10000	C

ALIGNMENTS

```
RESULT 1
ABG61.585
ID ABG6
XX ABG6
XX ABG6
XX ABG6
XX ABG6
XX High
XX 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          High growth methanotrophic bacterial strain; C1 carbon substrate; enzyme; methane; methanol; Emoden-Meyerhof carbon flux pathway; 16s RNA; pyrophosphate dependent phosphofrutokinase; nitrogen-containing compound; ammonia; nitrate; nitrite; nitrogen; pigment; oxygen; landfill;
                                                                                            Koffas M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       methane-containing environment; waste nitrous oxide; terpenoid; animal feed;
                                                                                                                                                                                                                                                                            01-SEP-2000; 2000US-229858P
                                                                                                                                                                                                                                                                                                                                                                   28-AUG-2001; 2001WO-US26827.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     14-MAR-2002.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WO200220728-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         High growth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ABG61585 standard; Protein; 544 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Methylomonas 16a.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ABG61585;
                                                                                                                                                                                         bd
                                                                                            Odom JM,
                                                                                                                                                                                         PONT DE NEMOURS & CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               methanotrophic bacterial strain polypeptide #35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                            Schenzle A;
                                                                                                                                                                                         tsj
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             water treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            exopolysaccharide
```

isoprenoid

```
N-PSDB; ABK83264
```

New high growth methanotrophic bacterial strain, useful for producing single cell proteins, grows on a Cl carbon substrate, and comprises a functional gene encoding in Embden-Meyerhof carbon pathway

Claim 11; Page 145-147; 157pp; English

RNN. The bacterial strain is useful for the production of single cell or protein and for the biotransformation of a nitrogen-containing compound, e.g. ammonia, nitrate, nitrite or nitrogen. It is also useful for the production of a feed product comprising a protein, carbohydrates and a pigment and for reducing oxygen demand, for removing nitrates and a pigment and for reducing oxygen demand, for removing nitrates and a remove treatment systems or anywhere that methane, oxygen and nitrates are present. The bacterial strain of the invention can be used as a denitritying agent for the conversion of nitrate or nitrite to nitrous oxide with methane or methanol as a carbon source. It is also used in the coxide with methane or methanol as a carbon source. It is also used in the production of biomass including proteins, carbohydrates and a wide variety of pigments (particularly for isoprenoid pigments for the purpose of generating animal feeds). In production of terpenoid and carbotand compounds, useful as pigments and as monomers in polymeric materials and in production of exopolysaccharides at high levels.

Sequences ABG61591-ABG61590 represent high growth methanotrophic contents of the invention comprises a invention relates to a high Invention relates to a high growth methanotrophic bacterial strair in grows on a C1 carbon substrate e.g. methane and methanol, and rises a functional Embden-Meyerhof carbon flux pathway comprising coding a pyrophosphate dependent phosphofrutokinase enzyme or a 1. The bacterial strain is useful for the production of single cell ein and for the historials. strain proteins of the invention. methanol, and 168

Seguence 544 A

100.0%; Score 2788; DB 2 100.0%; Pred. No. 3e-248;

23;

Length

δ 밁 8 δ 9 S B Ś 8 밁 5 g Ś g S g Query Match
Best Local Similarity
Matches 544; Conserv 421 421 361 301 301 241 181 181 121 121 13 بسر VTEDGAETDLDLGHYERFLKTIMTKKNNFTTGQVYEQVLANERKGDYLGATVQVIPHITD 120 MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF EAAGMKFSGKSLDGRLVEIIBLPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHKT EAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDV1TERHRHRYEFMNQYLKQL ISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEMMD TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGBRGVEGK TDAYKSLNEALIHAGIHTRHKVQISYIDSETTSAEGTAKLKNVDAILVPGGFGERGVEGK 360 DTTYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEXVVDGLTHPTDEVSIAIVGKYVDH SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA EIKRRYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRERALFIHLTLVPYIK EIKRRYESAEGKOVALIBYGGTYGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH Conservative 0 Mismatches 0 Indels 0 Gaps 180 300 180 60 540 360 300 240 240 60 480 420 420

```
AAE2230
AAE223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Carotenoid; isopentenyl pyrophosphate; antheraxanthin; astaxanthin; diet; anti-oxidant; steroid; flavour; fragrance; electro-optic application; aquaculture; enzyme; CTP synthase; PyrG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-SEP-2000;
01-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               04-SEP-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   07-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WO200218617-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Methylomonas 16a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAB22306;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAB22306 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          541 QGTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2000US-229858P.
2000US-229907P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   16a sp.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2001WO-US27420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTP synthase (PyrG) enzyme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
```

Brzostowicz PC, (BUPO) 2002-351711/38. DB; AAD35504. Picataggio PONT DE NEMOURS Cheng Q, aggio SK, Rouviere רא Dicosimo DJ, Rouviere PE; S Koffas Z, Miller S

Producing carotenoid compounds e.g. antheraxanthin and astaxanthin, by using microorganisms having a nucleic acid molecule encoding enzymes in the carotenoid biosynthetic pathway and which metabolize single carbon ij

Claim 46; Page 120-122; 156pp; English

The method comprises a transformed metabolising host cell, comprising suitable levels of isopentenyl pyrophosphate and a nucleic acid melecule encoding an enzyme in the carotenoid biosynthetic pathway, under the control of regulatory sequences, and contacting the host cell with carbon substrate to produce a carotenoid compound. The method is useful for producing carotenoid compound. The method is useful for producing carotenoid compound as antherexanthin and astaxanthin, by using microorganism having a nucleic acid molecule encoding enzymes in the carotenoid biosynthetic pathway and which metabolise single carbon substrates. The carotenoids have potent anti-oxidant properties useful in diet, and aquaculture elements. The carotenoids are also useful as intermediates in the synthesis of steroids flavours and fragrances and compounds for potential electro-optic applications. The present sequence is Methylomonas 16a sp. CTP synthase (PyrG) enzyme used in the invention.

Sequence 544 Ä

S 밁 밁 S Query Match Best Local S Matches 544 544 51 13 Similarity TEDGAETDLDLGHYERFLKTIMIXKNNFTIGQVYEQVLRNERKGDYLGATVQVIPHITD MTKF1F1TGGVVSSLGKGIAASSLAAILEDRGLKVT1TKLDPY1NVDPGTMSPFQHGEVF MTKPIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTWSPPQHGEVF Conservative 100.0%; 0; Score 2788; Pred. No. 36 Mismatches 3e-248; DB 23; 0 Indels Length 544; 0; 120 120 60 60

```
RESULT 3
AAUB03300
ID AAUB
XX AAUB
AC AAUB
AC AAUB
XX ISOE
KW ISOE
KW Eera
KW Eyrc
OX Meth
XX WO2C
XX WO2C
XX UO2C
XX UO2C
XX WO2C
XX WO2C
XX WO2C
XX OL-(
XX 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                        N-PSDB;
                                                                                                                                                                                                                                                                                         Cheng Q, Ko
Schenzle A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Methylomonas sp
                                                                                                                                                                                                                                                                                                                                                                                                                01-SEP-2000; 2000US-229907P
                                                                                                                                                                                                                                                                                                                                                                                                                                                               29-AUG-2001; 2001WO-US26852
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                W0200220733-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Isoprenoid biosynthetic enzyme; isoprenoid compound; feed additive; keratenoid; pigment; flavour; fragrance; open reading frame 6; ORF6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Methylomonas 16a ORF6 pyrG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  15-JUL-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAU80330;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAU80330 standard;
                                                                                                                                                                                                                                                                                                                                                                    (DUPO ) DU PONT DE NEMOURS & CO
                                                                                                                                                                                                                                               2002-383051/41.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                     ABK50086.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ISTVRFARENKIPYLGICLGWQSAVIEFARNVVGLEGAHSTEFLPKSƏHPVIGLITEWMD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DT1YR1PILLREQGIDDLVVDQLKLJVPAADLSAMEKVVDGLTHPTDEVSIAIVGKYVDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EAAGMKFSGKSLDGRLVEIIBLPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYBENNQYLKQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGPGERGVEGK 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SAGELKTKPTOHSVKELRTIGIOPDILICRSEOPIPASERRKIALFTNVAEKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKJALFTNVABKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QGTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QGTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EAGEL VTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITEWMD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIROMGVELGRDRALFIHLTLVPYIK
                                                                                                                                                                                                                                                                                           Koffas M,
A. Tomb J;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             synthase enzyme.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               entry)
                                                                                                                                                                                                                                                                                                                Norton
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (CIP
                                                                                                                                                                                                                                                                                                                   ñ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  544
                                                                                                                                                                                                                                                                                                                                                                    BI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              synthase enzyme) protein sequence.
                                                                                                                                                                                                                                                                                                                   Odom JM,
                                                                                                                                         isoprenoid biosynthetic enzyme, for the production of isoprenoid
                                                                                                                                                                                                                                                                                                                   Picataggio
                                                                                                                                                                                                                                                                                                                   (S
                                                                                                                                                                                                                                                                                                                   Rouviere
                                                                                                                                                                                                                                                                                                                   면
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       180
```

The present invention relates to a new nucleic acid molecule encoding an isoprenoid biosynthetic enzyme isolated from Methylomonas 16a.

Antisense; prokaryotic cellular proliferation antibiotic; antibacterial; drug design.

protein protein

Pseudomonas

aeruginosa cellular proliferation

Pseudomonas aeruginosa

Claim 4; Page 74-76; 84pp; English

Novel nucleic acid molecule encoding a isolated from Methylomonas 16a, useful

compounds

```
RESULT 4
AAGG6340
ID AAGG
XX
AAC AAGG
XX
AC AAGG
XX
DE 14-P
DE 14-P
DE Pseu
XX
DE Pseu
XX
AC AAGG
XX
DE PSeu
                                                                                                                                                                                                                                                         문
                                                                                                                                                                                                                                                                                  5
                                                                                                                                                                                                                                                                                                                      쁑
                                                                                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                   멍
                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    88888888888888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity
Matches 544; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             The invention is useful for obtaining a nucleic acid molecule encoding an isopremoid compound biosynthetic enzyme, and for the microbial production of isopremoid compounds. The molecules of the invention are also useful for regulating isopremoid biosynthesis in an organism and for producing recombinant organisms for producing various isopremoid compounds. The nucleic acid is also useful for feed additive, for the production of keratemoids and their derivatives, isopremoid intermediates, and as pure products useful as pigments, flavours and iragrances. The present amino acid sequence represents the Methylomonas lea open reading frame 6 (ORF) pyrG (CTP synthase enzyme) protein of
                                                                                                              14-FEB-2002
                                                                                                                                            AAU36340;
                                                                                                                                                                         AAU36340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 the invention, as described above.
                                                                                                                                                                                                                                                         541
                                                                                                                                                                                                                                                                                      541
                                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                                      481
                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     μ.
                                                                                                                                                                         standard;
                                                                                                                                                                                                                                                                                      QGTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGK 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                       QGTA 544
                                                                                                                                                                                                                                                                                                                                               EAAGMKFSGKSLDGRLVBIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHKT
                                                                                                                                                                                                                                                                                                                                                                                                      EAGEL VTRDEDSDLGGTMRLGAQXCRLKADSLAPQLYQXDVI TERHRHRYEFNNQYLKQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                ISTVRPARENKI PYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEMMD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEWMD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EIKRRYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VTEDGAETDLDLGHYERFLKTIMIKKNNFTIGQVYBQVLRNERKGDYLGATVQVI PHITD
                                                                                                                                                                                                                                                                                                                      EAAGMKFSGKSLDGRLVEIIBLPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHKT
                                                                                                                                                                                                                                                                                                                                                                                   EAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TDAYKSLNBALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    544 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                            (first entry)
                                                                                                                                                                         Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100.0%;
                                                                                                                                                                           542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 2788; DB 2
Pred. No. 3e-248;
); Mismatches 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                      540
                                                                                                                                                                                                                                                                                                                                                   540
                                                                                                                                                                                                                                                                                                                                                                                                                   480
                                                                                                                                                                                                                                                                                                                                                                                                                                                  420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                   480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
```

```
함.
                                   Ş
                                                                 밁
                                                                                            δ
                                                                                                                            밁
                                                                                                                                                  5
                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                        망
                                                                                                                                                                                                                                                                                                                                                                                                          The invention relates to antisense inhibitors of genes essential to CD prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella pneumoniae, Pseudomonas aeruginosa and Enterococcus faecalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to identify proteins used in proliferation, to express these proteins, and to obtain antibodies capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in essential prokaryotic cellular proliferation protein.

CC Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO at
                                                                                                                                                                                                                                                                                                                        Query Match
Best Local 9
                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21-MAR-2000;
23-MAY-2000;
26-MAY-2000;
                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  23-OCT-2000;
27-NOV-2000;
                                                                                                                                                                                                                                                                                                                                                                                                ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Example 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21-MAR-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     16-FEB-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO200170955-A2
                                                                                                                                                         121
                                                                   181
                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ELITRA PHARM INC
                                                                                                                                                                                                                                                                                                                        Similarity
DTIYRIPSVLHAQGLDDIVVERFGLECGQADLSEWDRVVDAKLNPEREVTIAMVGKYMEL
                         DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH
                                                                                                                                               EIKRRYYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N
N
N
                                                                                          SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA
                                                                                                                          EIKRRIIKGAGDADVALVEIGGTVGDIESQPFLEAIRQLRVEIGAKRAMLMHLTLVPYIA
                                                                                                                                                                                    VTQDGAETDLDLGHYERFVRTTMTQNNNFTTGRVYMDVLRKERRGDYLGATVQVI PHITD
                                                                                                                                                                                                         VTBDGAETDIJDLGHYERFLKTIMTKKNNFTTGQVYBQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                             MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                   542 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Seq ID No 11933; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2000US-191078P.
2000US-206848P.
2000US-207727P.
2000US-242578P.
2000US-242578P.
2000US-257931P.
2000US-257931P.
2000US-269308P.
                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ohlsen
Xu HH;
                                                                                                                                                                                                                                                                                                                        72.0%;
71.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ĺ
                                                                                                                                                                                                                                                                                                       64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Zyskind JW,
                                                                                                                                                                                                                                                                                                                        Score 2008; DB 2
Pred. No. 3e-176;
                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Wall D,
                                                                                                                                                                                                                                                                                                                                   DB 22;
                                                                                                                                                                                                                                                                                                     92;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Trawick JD,
                                                                                                                                                                                                                                                                                                                                   Length 542;
                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ۰ e
                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Carr
                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5
                                                                                               240
                                                                                                                            180
                                                                                                                                                         180
                                    300
                                                                                                                                                                                     120
                                                                 240
                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                               60
```

```
RESULT 5
AAU34682
ID AAU3
AC Bach
KW Anti
KW Anti
KW Anti
KW Anti
CO 27-C
PN WO20
AC 21-W
PR 23-C
PR 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21-MAR-2000; 2000US-191078P.
23-MAY-2000; 2000US-206848P.
26-MAY-2000; 2000US-207727P.
23-OCT-2000; 2000US-245578P.
27-NOV-2000; 2000US-253625P.
22-DEC-2000; 2000US-25793IP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Antisense; prokaryotic cellular proliferation protein; antibiotic; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAU34682;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Haselbeck
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  21-MAR-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   27-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO200170955-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     14-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAU34682 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (-TIJE)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               coli cellular proliferation protein #263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ELITRA PHARM INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                'n
K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EAAGMKFSGKSLDGRLVBIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKH 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYBFNNQYLKQL 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TDAYKSLNEALIHAGIHTRHKVQISYIDSSTIEAEGTAKLKNVDAILVPGGEGERGVEGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ISTVQYARENKIPYLGICLGMQVAVIEYARNVLGMSDANSTEFDKSSGHPVVGLITEMQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EQAGLKISGRSGDGALVEVVEAPEHPWFVACQFHPEFTSTPRDGHPLFSGFVNAALKY 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATGATEIRTEASDIGGTMRIGAQECQLQTGTLVHDCYAKDVIVERHRHRYEVNNNLLPQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ISTVRPARENKI PYLGICLGMQSAVIEFARNVVGLEGAHSTEFLEKSPHEVIGLITEMMD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2001US-269308P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ohlsen
Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ĺ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Zyskind JW,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Wall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Trawick JD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              360
```

New polynucleotides for the identification and antibiotics, comprise sequences of antisense nu 2001-611495/70.)B; AAS52541. nucleic acids

' 유

Example 3; Seq ID No 10275; 511pp; English

The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are scherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella pneumoniae, Pseudomonas aeruginosa and Entercoccus faecalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense mucleic acids can also be used to identify proteins used in proliferation, to express these proteins, and to obtain antibodies capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in

```
RESULT 6
AAU35582
                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              888888888
                                                                                                                                                                                                                       용
                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                        ₽
                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                ફ
                                                                                                                                                                                                                                                                                                                                                                                                  문
                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local S
Matches 363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a wide variety of organisms. The present sequence represents essential prokaryotic cellular proliferation protein.

Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO at
21-MAR-2000; 2000US-191078P.
23-MAY-2000; 2000US-206848P.
                          21-MAR-2001;
                                                            WO200170955-A2
                                                                             Haemophilus
                                                                                              Antisense; prokaryotic cellular antibiotic; antibacterial; drug
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                        Haemophilus
                                                                                                                                          14-FEB-2002
                                                                                                                                                                           AAU35582
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                           363
                                                                                                                                                                                                                                                                                                            362
                                                                                                                                                                                                                                                                                                                              303
                                                                                                                                                                                                                                                                                                                                               302
                                                                                                                                                                                                                                                                                                                                                                243
                                                                                                                                                                                                                                                                                                                                                                                                   183
                                                                                                                                                                                                                                       482
                                                                                                                                                                                                                                                         423
                                                                                                                                                                                                                                                                                                                                                                                  242
                                                                                                                                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                                                                                                                                                                                                     123
                                                                                                                                                                                                                                                                                                                                                                                                                                                       122
                                                                                                                                                                                                                       483
                                                                                                                                                                                                                                                                         422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            363;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                      DAYKSLMEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGYBCKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TKFIFITGGVVSSLGKGIAASSAAIAILEDRGLKVTITKLDYVINDPGTMSPFQHGVVVV
                                                                                                                                                                                                                                                                                                      STVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITEMMDE
                                                                                                                                                                                                                                                                                                                                                                         TIYRIPLLLREGGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                TKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITDE 121
                                                                                                                                                                           standard;
                                                                                                                                                                                                                     DAGLRVAGRSGDDQLVBIIEVPNHPWPVACQFHPETTSTPRDGHPLFAGFVKAASS
                                                                                                                                                                                                                                  AAGMXFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAK 537
                                                                                                                                                                                                                                                        NGNVEVRSEKSDLGGTWRLGAQQCQLVDDSLVRQLYNAPTIVERHRHRYEVNNMLLKQIE
                                                                                                                                                                                                                                                                 AGELVIRDEDSDLGGTWRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                                         TTARFARENNI PYLGI CLGMQVALI DYARHVANMENANSTEFVPDCKYPVVALI TEWRDE
                                                                                                                                                                                                                                                                                                                                                               SIYKIPGILKSQGLDDYICKRFSLNCPEANLSEWEQVIFEBANPVSEVTIGMVGKYIBLP
                                                                                                                                                                                                                                                                                                                                                                                                                                   TEDGAETDLDLGHYERFIRTKMSRRNNFTTGRIYSDVLRKERRGDYLGATVQVIPHITNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TNYIFVTGGVVSSLGKGIAAASLAAILEARGLNVTIMKLDPYINVDPGTMSPIQHGEVFV
                                                                                                                                                                                                                                                                                                                             DAYKSVIBALKHGGLKNRVSVNIKLIDSODVETRGVBILKGLDAILVPGGFGYRGVEGMI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (i)
(5)
                                                                                                                      influenzae cellular proliferation protein
                                                                             influenzae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                           2001WO-US09180
                                                                                                                                         (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AA;
                                                                                                                                                                           Protein; 545
                                                                                                                                        entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   68.7%; Score 1916; 67.7%; Pred. No. 9.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           71;
                                                                                              proliferation design.
                                                                                                                                                                           A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ed. No. 9.3e-168;
Mismatches 102;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             22;
                                                                                                      protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                      538
                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                    182
                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       122
                                                                                                                                                                                                                                                         482
                                                                                                                                                                                                                                                                                          422
                                                                                                                                                                                                                                                                                                                             362
                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                              302
                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                  242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
                      δ
                                          뫊
                                                       S
                                                                        밁
                                                                                           Ş
                                                                                                               맑
                                                                                                                            S
                                                                                                                                                밁
                                                                                                                                                                Ś
                                                                                                                                                                                  В
                                                                                                                                                                                                  Ś
                                                                                                                                                                                                                     ₽
                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                          Query Match
Best Local S
Matches 364
                                                                                                                                                                                                                                                                                         Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   New
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Yamamoto
          363
                          362
                                           303
                                                            302
                                                                             243
                                                                                              242
                                                                                                               183
                                                                                                                               182
                                                                                                                                                 123
                                                                                                                                                                   122
                                                                                                                                                                                                                                                       364;
                                                                                                                                                                                   63
                                                                                                                                                                                                   62
                                                                                                                                                                                                                     w
                                                                                                                                                                                                                                      N
                                                                                                                                                                                                                                                                Similarity
         RTAQYARENKIPYLGICLGMQIALIEYARNVAGLTKANSSEFDKDCEQPVVALITEWQDA
                                                                           SIYQIPALLKSQGLDDFVCERFRLTCPEADLTEMEQVLYKQANPVGEVTIGMVGKYTELP
```

STVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITEWNDE 421

422

DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGKI

361 362

302

242

182

DAYKSVNEALKHAGLTNRLSVNIKYIDSQDVETKGVEVLKGIDGILVPGGFGYRGVEGKI

TIYRIPLLLREQGLDDLWVDQLRLDWPAADLSAMEKVVDGLTHPTDEVSIAIVGKYVDHT 301

AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD 241

IXDRVIAGAQGHDVVIVEVGGTVGDIESLPFLEALRQLAVQVGREHTLFMHLTLVPYIPT IKRRVYBSAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS 181 TQDGASTDLDIGHYERFIRTKMIKRNNFTTGKIYSEVLRKERRGDYLGATIQVIPHITNE 122

AGEVKTKPTQHSVKELLSIGIQPDVLICRSDRMIPPNERAKIALFCNVAERAVISLKDVN

TEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITDE 121

TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV

Conservative

68.5%;

; Score 1908.5; DB 22; ; Pred. No. 4.6e-167; 71; Mismatches 103; I

Indels Length

۲,

61

545;

INYIFVIGGVVSSLGKGIAAASLAAILEARGLNVTIMKLDPYINVDPGTMSPTQHGEVFV 62

```
The invention relates to antisense inhibitors of genes essential to CC prokaryotic cellular proliferation, their use in identifying the CC genes, their use in the discovery of novel antibiotics, the essential CC genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella CC pneumoniae, Pseudomonas aeruginosa and Enterococcus faecalis. The CC invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to identify proteins used in proliferation, to express these proteins. CC and to obtain antibodies capable of binding to the expressed proteins. CC The proteins can be used to screen compounds in rational drug discovery corresponded to the captes and the screen compounds of the proteins can be used to screen compounds of the captes and to screen compounds. The altisense nucleic acid sequence is also useful to screen for homologous mucleic acids which are required for cell proliferation in cessential prokaryotic cellular proliferation protein.

CC wide variety of organisms. The present sequence represents an cessential prokaryotic cellular proliferation form part of the printed specification, but was obtained in electronic format directly from WIPO at the printed specification in the contents.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26-MAY-2000;
23-OCT-2000;
27-NOV-2000;
27-DSC-2000;
16-FEB-2001;
                                               ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2001-611495/70.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Haselbeck
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (ELIT-) ELITRA PHARM INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   polynucleotides for the identification and development
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 , k
545 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Seq ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; 2000US-207727P.
; 2000US-242578P.
; 2000US-253625P.
; 2000US-257931P.
; 2001US-269308P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 comprise
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ohlsen
Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mo 11175; 511pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ģ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sequences of antisense nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Zyskind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ţ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Wall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Trawick
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ą,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 Off
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Carr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   <u>.</u>.
```

```
RESULT 7
AB276969
ID AB276969
ID AB276969
XX AB27
XX AB27
XX AB27
XX Neig
PM W020
XX Noig
PM W020
XX 10-0
PM 12-1
XX (CHI
PM WPI;
DR W
8
                                                S
                                                                                                      맒
                                                                                                                                                    Ś
                                                                                                                                                                                                            맑
                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local S
Matches 359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      The present invention relates to proteins from Neisseria gonorrhoeae. Also disclosed are the nucleic acid molecules encoding the proteins are antibodies that specifically bind to the proteins. The composition comprising the protein, nucleic acid or antibody is useful for the manufacture of a medicament for treating or preventing N. gonorrhoeae infection, this may be in the form of a vaccine or gene therapy. Sequences given in records ABP76736-ABP81046 represent nucleic acid molecules of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Disclosure; Page 222; 815pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      New protein from Neisseria gonorrheae, useful for the manufacture medicament for treating or preventing N. gonorrheae infection
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N. gonorrhoeae amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              12-FEB-2001; 2001GB-0003424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           10-OCT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WC200279243-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Neisseria gonorrhoeae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Antibacterial;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ABP76969;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ABP76969 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (CHIR-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    12-FEB-2002;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2003-058415/05
)B; ABZ37939.
                                                                                                         121
                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          483
  181
                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                         ۳
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ₹
₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CHIRON SPA
                      SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA
                                                                                                                                        BIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK 180
AAGEIKTKETQHTVKEMLSIGLQEDILICRMDRKMPADERRKIALFCNVEERAIVGSYDV
                                                                                                         EIKRRIHEGAAGYDVAIVEIGGTVGDIESLPFLEAIRQMRSQLGRMNTLFAHLSYVPYIA
                                                                                                                                                                                                            VTDDGASTDLDLGHYERFIDSTMTRRNSFSTGQVYENVLAKERRGDYLGGTVQVIPHITD
                                                                                                                                                                                                                                                 VTEDGAETDLDLGHYERFLKITMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                   MTKFIFVTGGVVSSLGKGLAAASIAAILESRGLNVTWLKLDPYINVDPGTWSPFOHGEVF
                                                                                                                                                                                                                                                                                                                                                        MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTKSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KAGLKVTGLSADKKLVEIIEVPNHPWFVACQFHPEFTSTPRDGHPLPAGFVKAAYENHK 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAGMKFSGKSLDGRLVEIIELPEHDWFLACQFHPEFTSTPRNGHALFSGFVEAA-AKHK 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGSLVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EGNTEVRTDESDIGGTYRLGAQQCHIVSGSRARELYGKETTEERHRHRYEVNNTLLPQIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        544
                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2002WO-IB02069
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pizza M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 infection;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              entry
                                                                                                                                                                                                                                                                                                                                                                                                                                                      66.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Masignani V,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    vaccine;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sequence SEQ ID 468.
                                                                                                                                                                                                                                                                                                                                                                                                                    Score 1889.5; DB 24;
Pred. No. 2.6e-165;
Wiematches 102;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       £
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene therapy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Monaci
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                               ين
--
                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     e,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        and
                                                   240
                                                                                                      180
                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                120
                                                                                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                482
```

```
RESULT B
ANUSLT B
ANUSLT B
ANUSLT S
ID SAPI
XX ANUS
XX ANUS
XX ANUS
XX ANUS
XX ANTI
XX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         26-MAY-2000;
23-OCT-2000;
27-NOV-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            21-MAR-2000;
23-MAY-2000;
                                                                                                                                                                                                                                                                                                                   Haselbeck R,
Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21-MAR-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             27-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Salmonella typhi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Salmonella typhi cellular proliferation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  14-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAU38272;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAU38272 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 antibiotic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Antisense; prokaryotic cellular
                                                                                                                                                                                                                                                                                                                                                                                    (ELIT-)
                                                                                                                                                                                                                                                                                                                                                                                                                                  16-FEB-2001;
                                                                                                                                                                             polynucleotides for the identification biotics, comprise sequences of antisens
                                                                                                                                                                                                                                                2001-611495/70.
)B; AASS6131.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   53B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                    ELITRA PHARM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ŋ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HK 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DTIYRIPLILREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHFTDEVSIAIVGKYVDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ALEQAGLVIGGVSAGRERLVETIELPNHPWFFACQFHPEFTSNPRKGHPLFTAFVKÄALN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QLEAAGMXFSGKSLD-GRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QTADGSVETRDESADLGGTMRLGAQEVELKAGSLAVKIYGSGHIRERHRHRYEVNNNYVS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MDEAGEL VTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GKIAAVRYARENNVPYLGICLGMQIALIEYARDVAGLKGANSTEFDLKCAAPVVALIDEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DSIYECPEMLHDQGIDNIITEQLQLNVQQADLTAWKKIVHAVKNEKHTVKIAMVGKYVDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TESYKSLI RALKHAGIHTETDVQITFVDSESIEKNKGDVSVLKDMDAILVPGGFGSRGVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TDAYKSLNBALIHAGIHTRHKVQISYIDSBTIBAE--GTAKLKNVDAILVPGGFGERGVB
                                                                                                                                                                                                                                                                                                                                                                                                                             72000US-191078P.

72000US-206848P.

72000US-207727P.

72000US-242578P.

72000US-257931P.

72000US-257931P.

72001US-269308P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 antibacterial;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first
                                                                                                                                                                                                                                                                                                                 Ohlsen
Xu HH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                entry
                                                                                                                                                                                                                                                                                                                                         Zyskind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 brap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               proliferation
design.
                                                                                                                                                                                  of antisense
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                           Ę
                                                                                                                                                                                                                                                                                                                                           Wall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein #163.
                                                                                                                                                                               and development
se nucleic acids
                                                                                                                                                                                                                                                                                                                                           Ó
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       protein:
                                                                                                                                                                                                                                                                                                                                           Trawick
                                                                                                                                                                                                                                                                                                                                           ģ
                                                                                                                                                                                      , O
                                                                                                                                                                                                                                                                                                                                           Carr
                                                                                                                                                                                                                                                                                                                                           <u>2</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           300
```

The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the genes, their use in the discovery of novel antibiotics, the essential genes themselves and the encoded proteins. The prokaryotes used are Escherichia coli, Staphylococcus aureus, Salmonella typhi, Klebsiella

No 13865;

511pp;

English

```
RESULT 9
AAR15612
ID AAR1
XX AAR1
AC AAR1
AC AAR1
XX O5-M
DT 05-F
XX CTP
XX CYti
XX Baci
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B
                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                먕
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           よ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches 341;
                       Bacillus natto
                                                                 Cytidine
                                                                                                                                                          25-MAR-2003
05-FEB-1992
                                                                                                                                                                                                                          AAR15642;
                                                                                                                                                                                                                                                                    AAR15642
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        pneumoniae, Pseudomonas aeruginosa and Enterococcus faecalis. The invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to identify proteins used in proliferation, to express these proteins, and to obtain antibodies capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in a wide variety of organisms. The present sequence represents an essential prokaryotic cellular proliferation protein. Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic forms the first full form wipon in the process of the printed specification, but was obtained in electronic forms the process of the printed specification at the printed specification will be at the printed specification at the printed specification will be at the printed specification and the printed specification will be at the printed specification will be at the printed specification and the printed specification will be at the printed specification and th
                                                                                                           CTP synthetase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                          482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ∄83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ≗82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                  standard;
                                                                                                                                                                                                                                                                                                                                                                                                       AAGMKPSGKSLDGRLVEIIELPEHPW 507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TIYRIPLLLLREQGLDDLVVDQLRLSVPAADLSAWSKVVDGLTHPTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DGNVEVRSEKSDLGGTMRLGAQQCQLSDDSLVRQLYGASTIVERHRHRYEVNNMLLKQIB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGELVTRDEDSDLGGTWRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATARYARENNIPYLGICLGMQVALIBFARNVAGMDNANSTEFVPDCKYPVVALITEWRDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STVRFARENKIPYLGICLGMQSAVI3FARNVVGLEGAHSTEFLPKSPHPVIGLITEMMDB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DAYKSVI EALKHGGLKNRVTVNÍKLÍ DSQDVETRGVETLKDLDATLI PGGFGYRGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SIYKIPGLLKSOGLDDYICKRFSLNCPEANLSEWBOVIYEEANPAGEVTIGMVGKYIELP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                              AAGXXXXGRSGDDQLVEIIEVPNHXW 508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGEVKTKPTQHSVKELLSIGIQPDILICRSDRAVPANERAKIALFCNVPEKAVISMKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IKRRVYBSABGKDVALIBVGGTVGDIBSLPFLBTIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TNYIFVTGGVVSSLGKGIAAASLAAILEARGLNVTIMXLDPYINVDPGIMSPIQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  511 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                      (updated)
(first en
                                                                                                                                                                                                                                                                  Protein;
                                                                                                                                                        entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              64.0%;
                                                                                                                                                                                                                                                                    535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         64; Mismatches 101;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 1783; DB 22;
Pred. No. 1.6e-155;
                                                                                                                                                                                                                                                                    ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     511;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
```

```
윰
                     Q
                                                   밁
                                                                            Q
                                                                                                        밁
                                                                                                                               S
                                                                                                                                                             맑
                                                                                                                                                                                      S
                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                          5
                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                           망
                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Microorganisms transformed with the gene can be cytidine for use as a starting cpd. for prodn. c (Updated on 25-MAR-2003 to correct PA field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Disclosure; Fig 2; Spp; Japanese
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         <code>Prodn.</code> of cytidine by fermentation with increased yield - comprises transforming a suitable microorganism with a recombinant DNA contg. CTP synthetase gene and incubating with a uracil cpd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    N-PSDB; AAQ14668.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                05-FEB-1990;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          09-0CT-1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    JP03228689-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   05-FEB-1990;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (ASAH ) ASAHI
                           538
                                                     471
                                                                              478
                                                                                                          421
                                                                                                                                  418
                                                                                                                                                             361
                                                                                                                                                                                         358
                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                            299
                                                                                                                                                                                                                                                                        241
                                                                                                                                                                                                                                                                                                  239
                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1991-343171/47.
                                                                                                                                                                                                                                                                                                                                                        179
                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              310;
                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ш
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           similarity 57.0%;
AANO
                         HKTQ 541
                                                                         KQLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALPSGFVEAAAK 537
                                                   QOMEEQGEVESGTSPDGRLVEIIELKDHPWFVASQEHPEEKSRPTRPQPLFKGFIGASVB
                                                                                                        QKDV------BDLGGTLRLGLYPCKLEEGTKAFEVYQDEVVYERHRHRYEFNNEFR 470
                                                                                                                                 WYDEAGBLYTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYL 477
                                                                                                                                                                               EGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITE
                                                                                                                                                                                                                                        DHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKL-KNVDAILVPGGFGERGV 357
                                                                                                                                                                                                                                                                     DADNIYSIPLELQKQGLDKLVCEHMXLACKEAEMSEWKELVNKVSNLSQTITIGLVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                    VTDDGAETDLDLGHYERFIDINLNKFSNVTTGKIYSTVLKKERRGDYLGGTVQVIPHITN
                                                                                                                                                                                                                                                                                                                                                                                                                                                    VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                   ELPDAYISVVESLRHAGYAFDTDVKVKWINAEEVTENNIAELTSGTDGIIVPGGFGDRGV
                                                                                                                                                                                                                                                                                               DADTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV 298
                                                                                                                                                                                                                                                                                                                           IKAAGELKTKPTQHSVKELRSLGIQPNIIVVRTEMPISQDMKDKIALFCDIDTKAVIECE
                                                                                                                                                                                                                                                                                                                                          IKSAGBIKTKPTQHSVKBLRTIGIQPDILICRSBQPIPASERRKIALFTNVABKAVISAI 238
                                                                                                                                                                                                                                                                                                                                                                                BLKDRVYRAGKETNADVVITEIGGTVGDIESLPPLEAIRONKSDIGRENVMYIHCTLVPY
                                                                                                                                                                                                                                                                                                                                                                                                       EIKRRVYESAB--GKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPY 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BGKIVATKYARENNIPELGICLGMQVASIEYARNVLGLKGAHSABIDPSTQYPIIDLLPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     535 AA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CHEM IND CO LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   90JP-0025574.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               90JP-0025574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            94;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 1622.5; DB 12
Pred. No. 1.1e-140;
4; Mismatches 127;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          of dr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            agurab
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       to produce
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              13:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          535;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                      530
                                                                                                                                                             420
                                                                                                                                                                                         417
                                                                                                                                                                                                                   360
                                                                                                                                                                                                                                                                        300
                                                                                                                                                                                                                                                                                                                                                                                180
                                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           60
                                                                                                                                                                                                                                                                                                                           240
```

ABB48439 ID ABB4 RESULT 10

ABB48439

standard;

Protein;

```
S
                                                                                                                    유
                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                      Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                    The present invention relates to the genome sequence of Listeria monocytogenes EGD-e (see ABA03041). The genome sequence and fragments of it are useful for selecting probes and primers for detecting genes in L. monocytogenes and related organisms, and for studying genetic polymorphisms and other genomes. The present sequence is a protein encoded by the genome sequence of the present invention. Proteins expressed from the genome sequence are useful for raising specific antibodies, identification of L. monocytogenes and related organisms, an for biosynthesis and biodegradation, especially biosynthesis of Vitamin 12. The genome sequence and proteins encoded by it are also useful for selecting compounds that regulate gene expression and cell replication and modulars.
                                                                                                                                                                                                                                                                                                                                                                          and modulate i. monocytogenes-related diseases. In addition, the genome sequence and proteins encoded by it are useful in pharmaceutical and vaccines compositions for the treatment or prevention of infections by L. monocytogenes and related organisms.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Buchrieser C, Frangeul L, Couve B, Rusniok C, Fsihi H, Dehoux P Dussurget O, Chetouani F, Nedjari H, Glaser P, Kunst F, Cossart Daniels J, Goebel W, Kreft J, Kuhn M, Ng E, Vazquez-Beland JA; Dominguez-Bernal G, Garrido-Garcia P, Tierrez-Martinez A, Amend A Chakraborty T, Domann E, Hain T, Berche P, Charbit A, Durant L, Perez-Diaz J, Baguero F, Garcia Del Portillo F, Gomez-Lopez N, Padduenio E, De Pablos B, Wehland J, Kaerst U, Entian K, Hauf J;
                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Genomic sequence for Listeria monocytogenes, useful e.g. for treatment and prevention of Listeria and related bacterial infections, and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WO200177335-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11-APR-2000; 2000FR-0004629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Antibacterial;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Listeria monocytogenes protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ABB48439;
                                                                                                                                                                                                                                                                                                                                                             Note:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (INSP ) INST PASTEUR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11-APR-2001; 2001WO-FR01118
                                                                                                                                                                                                                                                                                                                   ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2002-010914/01.
                                                                                                                                                                                                   299;
                                                                                                                                                                                                                                                                                                                                      The sequence data for this patent did not form part of the printed fication, but was obtained in electronic format directly from WIPO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6; SEQ ID No 1144; 192pp; French.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              polypeptides
                                                                 VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD 120
                                                                                                                    MIKYIFVIGGVVSSIGKGITAASLGRLLKNRGLSVIIQKFDPYINVDPGIMSPYQHGEVY
                                                                                                                                              MTXFIFITGGVVSSLGXGIAASSLAAILEDRGLXVTITKLDPYINVDPGTMSPPQHGEVF
EIKRRVYESAE--GKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPY 178
                                      VTSDGAETDLOLGHYERFIDINLMKYSNVTTGKVYSEVIKKERRGDYLGGTVQVIPHITN
                                                                                                                                                                                                                                                                                   532
                                                                                                                                                                                                   Conservative

    gene therapy; vaccine; biosynthesis; biodegradation;
bacterial infection; disease.

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                            57.4%; Score 1600.5; DB 23; Lengt 55.2%; Pred. No. 1.2e-138; tive 104; Mismatches 126; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        #1143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Rusniok C, Fsihi H, Dehoux P, Glaser P, Kunst F, Cossart M, Ng E, Vazquez-Boland JA;
                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                         532;
                                                                                                                                                                                                13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Dehoux P;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Amend A;
                                                                                                                                                                                                Gaps
                                                                                                                    60
                                                                                                                                                            60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          F g
```

```
RESULT 11
AAU36779
ID AAU36
AX AAU36
AAU36
AX AAU36
AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                               21-MAR-2000; 2000US-191078P.
23-MAY-2000; 2000US-206848P.
26-MAY-2000; 2000US-207727P.
23-OCT-2000; 2000US-242578P.
27-NOV-2000; 2000US-253625P.
22-DEC-2000; 2000US-253625P.
16-FEB-2001; 2001US-269308P.
                                                New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                                                                                                                                                                                  Haselbeck R,
Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Antisense; prokaryotic cellular proliferation protein; antibiotic; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Staphylococcus aureus cellular proliferation protein #949.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Staphylococcus aureus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      14-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAU36779
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              21-MAR-2001; 2001WO-US09180
                                                                                                                                                                                                                                                                                               (ELIT-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               418
                                                                                                                                                            2001-611495/70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                  AAS54638
                                                                                                                                                                                                                                                                                                 ELITRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WWDEAGELYTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SLODAYLSVAEALRHAGYDHDAEIEIDWIDSEKVTKENVAEIMKDVDGILVPGGFGDRAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DHTDAYKSINEALIHAGIHTRHKVQISYIDSETIEAEGTAK-LKNVDAILVPGGFGERGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DADTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWBKVVDGLTHPTDEVSIAIVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IKAAGEMKTKÞTQHSVKELRSLGIQÞNIIVVRTEQÞVSQEMKDKIALFCDIKASEVIESR 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HK 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EQMEBAGMIVSATSPDGRLVEVVBLIDHPWFVACQYHPBFISRPNRPQSLFXDFVGAALK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KQLEAAGWKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EGKIAAIEYARVNKVPYFGICLGWQLATVEFARNVLGLEGAHSASIEPETNHNIIDLLPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EGKISTVRFARENKI PYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DEETLYNVPLSLQKQKMDDIVLEHLQLEAPQAEMTDWKVLVHRVKVLSKKVRIGLVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                               Ohlsen
Xu HH;
                                                                                                                                                                                                                                                                                                 PHARM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -QKNIENMGGTLRLGLYPARIKQGTKAEAAYGTTLVEERHRHRYEFNNEYR
                                                                                                                                                                                                                                           7
                                                                                                                                                                                                                                         Zyskind JW,
                                                                                                                                                                                                                                           Wall
                                                                                                                                                                                                                                           'n
                                                                                                                                                                                                                                           Trawick
                                                                                                                                                                                                                                           Ď,
                                                                                                                                                                                                                                           Carr GJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           300
```

ID No 12372; 511pp; English

```
AAU37385
ID AAU3
XX
AC AAU3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                      よ
                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             $35555555555555555555555555555555555
                                                                       RESULT 12
                                                                                                                                                            Ś
                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                             명
                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            皮
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CC The invention relates to antisense inhibitors of genes essential to CC prokaryotic cellular proliferation, their use in identifying the CC genes, their use in the discovery of novel antibiotics, the essential CC genes themselves and the encoded proteins. The prokaryotes used are CC pneumoniae, Pseudomonaes aeruginosa and Enterococcus faecalis. The CC invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used CC to identify proteins used in proliferation, to express these proteins, CC and to obtain antibodies capable of binding to the expressed proteins. CC The proteins can be used to screen compounds in rational drug discovery CC programmes. The antisense nucleic acid sequence is also useful to screen CC programmes. The protein are required for cell proliferation in CC a wide variety of organisms. The present sequence represents an CC essential prokaryotic cellular proliferation protein.

CC Note: The sequence data for this patent did not form part CC from tired specification, but was obtained in electronic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
   AAU37385
                                   AAU37385 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local
                                                                                                                              531
                                                                                                                                                                537
                                                                                                                                                                                                      471
                                                                                                                                                                                                                                           477
                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                   417
                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                          357
                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      302;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ξ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ب
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                            LKQLEAAGMKFSGKSLDGRLVEIIELPEHDWFLACQFHPEFTSTPRNGHALFSGFVEAAA 536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VTEDGAETDLDLGHYERFLKTTWTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDFYINVDFGTMSFFQHGEVF
                                                                                                                                                                                                                                                                                                           EWNDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHYEFNNQY
                                                                                                                                                                                                                                                                                                                                                SEGKISAIKYARENNVPFFGICLGMQLATVEFSRNVLGLEGAHSABLDPATPYPIIDLLP
                                                                                                                                                                                                                                                                                                                                                                                                                              VSLQDAYLSVVESLKHAGYPFAKDIDIRWIDSSEVTDENAAEYLADVDGILVPGGFGFRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VDHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAK-LKNVDAILVPGGFGERG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DADSLYEIPLQLSQQNWDDIVIKRLQLNAKYETQLDEWKQLLDIVNNLDGKITIGLVGKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DADTIYRIPLLLREQGLDDLVVDQLRLDVP-AADLSAMEKVVDGLTHPTDEVSIAIVGKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EIKERLLLAGESTNADVVITEIGGTTGDIESLPFIEAIRQIRSDLGRENVMYVHCTLLPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EIKRRVYESAE--GKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPY 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VTDDGAETDLDLGHYERFIDINLNKFSNVTAGKVYSHVLKKERRGDYLGGTVQVIPHITN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MTKF1FVTGGVVSSLGKG1TASSLGRLLKDRGLMVT1QKFDPYLMVDPGTMSPYQHGEVF
                                                                                                                                                                  KHK 539
                                                                                                                                                                                                      REQLEANGMVISGISPDGRLVEMVEIPTNDFFIACQFHPEFLSRPNRPHPIFKSFIEASL
                                                                                                                                                                                                                                                                                 EQXD----
                                                                                                                                                                                                                                                                                                                                                                                          VEGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLIT 416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             536 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  56.5%; Score 1576; DB 22;
55.6%; Pred. No. 2.2e-136;
tive 93; Mismatches 134;
                                                                                                                                                                                                                                                                           ---IEDLGGTLRLGLYPCSIKEGTLAODVYGKABIEERHRHRYEFNNDY
                                   ξ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 536;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  14;
                                                                                                                                                                                                                                                                               470
                                                                                                                                                                                                                                                                                                                                                      420
                                                                                                                                                                                                                                                                                                                                                                                                                              360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60
```

```
В
                                                                             Ś
                                                                                                                    밁
                                                                                                                                                 Ś
                                                                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                                              The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the cenes, their use in the discovery of novel antibiotics, the essential contents, their use in the discovery of novel antibiotics, the essential contents, their use in the discovery of novel antibiotics, the essential contents, themselves and the encoded proteins. The prokaryotes used are essention in also useful for the identification of potential subsidered invention is also useful for the identification of potential new targets for antibiotic development. The antisense nucleic acids can also be used to identify proteins used in proliferation, to express these proteins, and to obtain antibodies capable of binding to the expressed proteins. The proteins can be used to screen compounds in rational drug discovery programmes. The antisense nucleic acid sequence is also useful to screen for homologous nucleic acids which are required for cell proliferation in a wide variety of organisms. The present sequence represents an essential prokaryotic cellular proliferation protein.

Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO at
                                                                                                                                                                                  Matches 302;
                                                                                                                                                                                                  Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        21-MAR-2000;
23-MAY-2000;
26-MAY-2000;
23-OCT-2000;
23-OCT-2000;
27-NOV-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 2001-611495/70.
N-PSDB; AAS55244.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Antisense; prokaryotic cellular proliferation protein; antibiotic; antibacterial; drug design.
                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Example 3; Seq ID No 12978; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Haselbeck R,
Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            16-FEB-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21-MAR-2001; 2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Staphylococcus aureus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Staphylococcus aureus cellular proliferation protein #1555.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                14-FEB-2002 (first entry)
                                                                                                                                                                                                                                                                                  ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (ELIT-)
                   121
                                                     62
                                                                                   61
                                                                                                                                                    _
                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ELITRA PHARK
EIXRRYYBSAE--GKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPY
                                                 VIDDGABTDLDLGHYBRFIDINLNKFSNVTAGKVYSHVLKKERRGDYLGGTVQVIPHITN
                                                                   VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD 120
                                                                                                                 MTKFIFVTGGVVSSLGKGITASSLGRLLKDRGLAVTIQKFDPYLAVDPGTMSPYQHGEVF
                                                                                                                                                 MTKFIFITGGVVSSLGKGIAASSLAAILBDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                      536 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2000US-20684BP.
2000US-207727P.
2000US-24257BP.
2000US-253625P.
2000US-257931P.
                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2001US-26930BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2000US-19107BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ohlsen
Xu HH;
                                                                                                                                                                                                    56.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ė
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Zyskind JW, Wall D,
                                                                                                                                                                                    93;
                                                                                                                                                                                                  Score 1576; DB 22;
Pred. No. 2.2e-136;
                                                                                                                                                                                    Mismatches 134;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Trawick JD,
                                                                                                                                                                                    Indels
                                                                                                                                                                                                                    Length 536;
                                                                                                                                                                                    14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ۱ <u>۵</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Carr GJ;
                                                                                                                                                                                    Gaps
                                                     120
                                                                                                                                                  60
                   178
                                                                                                                    60
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ક
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             맒
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    몽
AAH52304 to AAH53970 represent nucleic acids (I) encoding polypeptides (III), given in AAG81454 to AAG83120, from Staphylococcus epidermidis. (I) and (II) can have antibacterial activity and therefore can be used in vaccination. The nucleic acids (I) may be used to produce the 5 epidermidis polypeptides (II) via the production of vectors containing them which are used to produce hosts cells which express the polypeptides. The polypeptides (II) (and/or nucleic acids) may then be
                                                                                                          Claim
                                                                                                                                                Nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                 Staphylococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        03-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAG81965
                                                                                                                                                                                                                                                                                                                                                                          Staphylococcus
                                                                                                                                                                                                                                                                                                                                                                                                      vaccination;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAG81965 standard;
                                                                                                                                   useful
                                                                                                                                                                                                                                                                   09-NOV-1999;
                                                                                                                                                                                                                                                                                             09-NOV-2000;
                                                                                                                                                                                                                                                                                                                       17-MAY-2001
                                                                                                                                                                                                                                                                                                                                                WO200134809-A2
                                                                                                                                                                                                                                          (GLAX )
                                                                                                                                                                                                                                                                                                                                                                                                                                            epidermidis
                                                                                                                                                                                      2001-316495/33.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                         18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                 c acids encoding for vaccinating
                                                                                                                                                                                                                                          GLAXO GROUP
                                                                                                                                                                         AAH52815
                                                                                                                                                                                                                 Ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KHK 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REQLEANGMVISGTSPDGRIVEMVEIPTNDFFIACQFHPEFLSRPNRPHPIFKSFIEASL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LKQLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EQKD---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EWNDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEGKISAIKYARENNVPFFGICLGMQLATVEFSRNVLGLEGAHSAELDPATPYPIIDLLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VEGKISTVRFARENKIPYLGICLGMQSAVIBFARNVVGLEGAHSTEFLFKSPHPVIGLIT 416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VDHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAK-LKNVDAILVPGGFGERG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DADSLYBIPLQLSQQNMDDIVIKRLQLNAKYETQLDBWKQLLDIVNNLDGKITIGLVGKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DADTIYRIPLLLREQGLDDLVVDQLRLDVP-AADLSAWEKVVDGLTHPTDEVSIAIVGKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IKAAGEMKTKPTOHSVKELRGLGIOPDLIVVRTEYEMTQDLKDKIALFCDINKESVIECR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EIKERLLLAGESTNADVVITEIGGTTGDIESLPFIEAIRQIRSDLGRENVMYVHCTLLPY 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KYQ 533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VSLQDAYLSVVESLKHAGYPFAKDIDIRWIDSSEVTDENAAEYLADVDGILVPGGFGFRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI
                                                                                                       Page 297-298; 2188pp; English
                                                                                                                                                                                                                                                                                           2000WO-US30782
                                                                                                                                                                                                                                                                                                                                                                                                      endocarditis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (first
                                                                                                                                                                                                                                                                                                                                                                          epidermidis.
                                                                                                                                                                                                                                                                                                                                                                                                                 epidermidis
                                                                                                                                                                                                                                                                                                                                                                                                                                          open reading
                                                                                                                                                                                                                                                                   9908-0164258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Protein;
                                                                                                                                                                                                                                          UTJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     entry)
                                                                                                                                 polypeptides from Staphylococcus epidermidis, against infections, e.g. endocarditis -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IEDLGGTLRLGLYPCSIKEGTLAQDVYGKAEIEERHRHRYBFNNDY
                                                                                                                                                                                                                                                                                                                                                                                                                  SRI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          535
                                                                                                                                                                                                                                                                                                                                                                                                                                          frame protein sequence
                                                                                                                                                                                                                                                                                                                                                                                                                 strain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3
                                                                                                                                                                                                                                                                                                                                                                                                                 infection; diagnosis;
                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                            ID NO:1024
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     297
```

```
밁
                       S
                                                                당
                                                                                               Ś
                                                                                                                                  밁
                                                                                                                                                               Ş
                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                             片
                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                 유
                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    뭐
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      皮
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        융
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8888888888888888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAH55098 represent oligonucleotide sequences and primers which are used in the exemplification of the present invention.

N.B. The present invention specifically claims all the polynucleotide sequences given in the sequence listing of the present specification, however the sequence listing only goes up to SEQ ID NO:4454 so even though sequences are given in the disclosure for SEQ ID NO:4465 to 4472 no sequences are present for SEQ ID NO:4455 to 4464.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    used to vaccinate subjects and to raise antibodies against the bacteria. The polypeptides may also be used to assay for other inhibitors of their activity and therefore identify compounds that may be used for the treatment of S. epidermidis infections, e.g. endocarditis. AAH53971 to AAH55090 represent specifically claimed S. epidermidis genomic DNA polynucleotide sequences from the present invention. AH55091 to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                               537
 531
                                                                   471
                                                                                                    477
                                                                                                                                     421
                                                                                                                                                                    417
                                                                                                                                                                                                       361
                                                                                                                                                                                                                                        357
                                                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                                                            298
                                                                                                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                                                                              239
                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                  179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                302;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                XXX 539
                                                                                      LXQLBAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEPTSTPRNGHALFSGFVEAAA 536
OAK
                                                                 REQLESNGMVFSGTSPDGRLVEIIEIFKNDFFIACQFHPEFLSRPNRPQPIFKSFVEAAL
                                                                                                                                     BOXO-
                                                                                                                                                       EWMDEAGELVTRDEDSDIGGTMRIGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQY
                                                                                                                                                                                                       SEGKIAAIRYARENNIPFFGICLGMQLATVEFARHVLGYEGAHSAELDPSTPYPIIDLLP
                                                                                                                                                                                                                                                                                                                                                                                                                                        IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKÄVISAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EIKERLLLAGESTNADVVITEIGGTTGDIBSLPFLEAIRQIRSDLGRENVMYVHCTLLPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EIKRRVYESAE--GKDVALIEVGGTVGDIBSLFFLETIROMGVELGRDRALFIHLTLVPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLKNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MTKF1FVTGGVVSSLGKG1TAASLGRLL%DRGLKVT1QKFDFYLNVDFGTMSFYQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MTKFIFITGGVVSSIGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                      VEGKISTVREARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLEKSPHEVIGLIT 416
                                                                                                                                                                                                                                                                                                          VDHTDAYKSLNBALIHAGIHTRHKVQISYIDSBTIEAEGT-AKLKNVDAILVPGGFGERG
                                                                                                                                                                                                                                                                                                                                             DADSLYEIPEQESKONMODIVIOREQENAKYETQEDEWKHLENTVNNLDGKITIGEVGKY
                                                                                                                                                                                                                                                                                                                                                                                DADTIYRIPLLLREQGLDDLVVDQLRLDVP-AADLSAWEKVVDGLTHPTDEVSIAIVGKY
                                                                                                                                                                                                                                                                                                                                                                                                               IKAAGEMKTKPTQHSVKELRGLGIQPDLIVVRTBYEMTQDLKDKIALFCDIKKESVIECR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VTDDGAETDLDLGHYERFIDINLNKYSNVTAGKVYSHVLKKERRGDYLGGTVQVIPHITN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AA,
                                                                                                                                                                                                                                                                             LSVVESLKHAGYPFKKDVVVKWIDSSEVNDDNVEAYLSDVDGILVPGGFGFRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              56.5%;
                                                                                                                                     - IEDLGGTLRLGLYPCHIKBGTLAEKIYNKNDIEERHRHRYEFNNEF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                95;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 1575; DB 22;
Pred. No. 2.7e-136;
5; Mismatches 132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           of their
                                                                     530
                                                                                                                                       470
                                                                                                                                                                        476
                                                                                                                                                                                                           420
                                                                                                                                                                                                                                                                             360
                                                                                                                                                                                                                                                                                                              356
                                                                                                                                                                                                                                                                                                                                                                                 297
                                                                                                                                                                                                                                                                                                                                                                                                                    240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               60
                                                                                                                                                                                                                                                                                                                                                300
                                                                                                                                                                                                                                                                                                                                                                                                                                                     238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            60
```

ABP39346 standard; Protein;

561

ያ

ABP39346;

24-JUL-2002 (first entry)

Staphylococcus epidermidis ORF amino acid sequence SEQ ID NO:4191.

RBSULT 14
ABP39346
ID ABP39
XX
XX
AC ABP39
XX
XZ
AC ABP39
XX
XX
DT 24-JU
XX
XX
Staph
XW Staph
XW antib Staphylococcus epidermidis; open reading antibacterial; gene therapy. frame; ORF; bacterial infection;

```
S
                                                   В
                                                                                Ś
                                                                                                            Вb
                                                                                                                                   S
                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                    맑
                                                                                                                                                                                                                                                                                                          Ś
                                                                                                                                                                                                                                                                                                                                           ď
                                                                                                                                                                   Βb
                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                    문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches 302;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AEN90538 to AEN93374 represent Staphylococcus epidermidis open reading frame (ORF) nucleic acid sequences which encode the amino acid sequences given in ABP35124 to ABP37960. The S. epidermidis sequences have antibacterial activity and can be used in gene therapy. The sequences can also be used in the diagnosis and treatment of bacterial infections, particularly S. epidermidis infections. The sequences can be used to screen for compounds able to interfere with the S. epidermidis life cycle or inhibit S. epidermidis infection.

N.B. The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Doucette-Stamm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14-AUG-1997;
08-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   30-APR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US6380370-B1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Novel isolated nucleic acid encoding a Staphylococcus epidermidis polypeptide, useful for diagnosing and treating bacterial infections
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        13-AUG-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Staphylococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (GENO-) GENOME
447
                         417
                                                      387
                                                                                 357
                                                                                                            327
                                                                                                                                         298
                                                                                                                                                                    267
                                                                                                                                                                                                239
                                                                                                                                                                                                                            207
                                                                                                                                                                                                                                                        179
                                                                                                                                                                                                                                                                                    147
                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                           87
                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                    27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                              SIKRRVYESAB--GKDVALIEVGGTVGDIESLPFLETIROMGVBLGRDRALFIHLTLVPY
                                                                                                                                                                                                                                                                                                                                                             VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                 MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDEGTMSPFQHGEVF
                                                                                                                                VDHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGT-AKLKNVDAILVPGGFGERG
                      EWMDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQY 476
                                                                                VEGKISTVRFARENKIPYLGICLGWOSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLIT 416
                                                                                                            VSLQDAYLSVVESLKHAGYPFKKDVVVKWIDSSEVNDDNVEAYLSDVDGILVPGGFGFRA
                                                                                                                                                                   DADSLYEIPLQLSKQNMDDIVIQRLQLNAKYETQLDEWKHLLNTVNNLDGKITIGLVGKY
                                                                                                                                                                                              DADTIYRIPLLLREQGLDDLVVDQLRLDVP-AADLSAWEKVVDGLTHPTDEVSIAIVGKY
                                                                                                                                                                                                                           IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI
                                                                                                                                                                                                                                                                                    BIKERLLLAGESTNADVVITEIGGTTGDIESLPFLEAIRQIRSDLGRENVMYVHCTLLPY
                                                                                                                                                                                                                                                                                                                                           VTDDGAETDLDLGHYERFIDINLNKYSNVTAGKVYSHVLKKERRGDYLGGTVQVIPHITN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               site.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    561 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQ ID 4191; 267pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ę
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            97US-055779P.
97US-064964P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             epidermidis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       98US-0134001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bush
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        56.5%; Score 1575; DB 23; 55.6%; Pred. No. 2.9e-136;
- I EDLGGTLRLGLYPCHI KEGTLAEKI YNKND I BERHRHRYE FNNEF
                                                                                                                                                                                                                                                                                                                                                                                                                                                         95;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels 14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      561;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                         356
                                                                                                                                                                    326
                                                                                                                                                                                                                                                        238
                                                                                                                                                                                                                                                                                                              178
                                                                                                                                                                                                                                                                                                                                           146
                                                                                                                                                                                                                                                                                                                                                                        120
                                                                                                                                                                                              297
                                                                                                                                                                                                                            266
                                                                                                                                                                                                                                                                                    206
                                                                                                                                                                                                                                                                                                                                                                                                 86
                                                                                                                                                                                                                                                                                                                                                                                                                              60
```

```
RESULT 15
AAU33488
ID AAU33
CC genes, their use in the discovery of novel antibiotics, the essential CC genes, their use in the discovery of novel antibiotics, the essential CC genes themselves and the encoded proteins. The prokaryotes used are CC Escherichia coll, Staphylococcus aureus, Salmonella typhi, Klebsiella CC pneumoniae, Pseudomonas aeruginosa and Enterococcus faecalis. The CC invention is also useful for the identification of potential new targets and the control of the expression of control of c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 26-MAY-2000;
23-OCT-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Haselbeck R, Yamamoto RT,
                                                                                                                                                                                                                                                                                                                                                                                                                             The invention relates to antisense inhibitors of genes essential to prokaryotic cellular proliferation, their use in identifying the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 2001-611495/70.
N-PSDB; AAS51347.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Example
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              New polynucleotides for the identification and development antibiotics, comprise sequences of antisense nucleic acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  22-DEC-2000;
16-FEB-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21-MAR-2000;
23-MAY-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21-MAR-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WO200170955-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Enterococcus faecalis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Antisense; prokaryotic cellular proliferation protein; antibiotic; antibacterial; drug design.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Enterococcus faecalis cellular proliferation protein #124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAU33488;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAU33488 standard; Protein; 536
                                         ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                27-NOV-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (ELIT-) ELITRA PHARM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         477 LKQLEAAGMKFSGKSLDGRLVEII∃LPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3; Seq ID No 4984; 511pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REQLESNGMVESGTSPDGRLVEIIEIPKNDFFIACQFHPEFLSRPNRPQPIFKSFVEAAL 556
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KHK 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NYQ 559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2000US-207727P.
2000US-242578P.
2000US-253625P.
2000US-257931P.
2000US-269308P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2000US-191078P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2001WO-US09180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2000US-206848P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ohlsen
Xu HH,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Zyskind
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Į,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Wall D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Trawick JD,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ı Ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Carr 61;
```

Sequence

```
Ş
                                   용
                                                Ś
                                                                     B
                                                                                       Ś
                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                          맑
                                                                                                                                                                                                                                                                                                          Ś
                                                                                                                                                                                                                                                                                                                             В
                                                                                                         뫄
                                                                                                                       S
                                                                                                                                             밁
                                                                                                                                                            δ
                                                                                                                                                                                문
                                                                                                                                                                                                S
                                                                                                                                                                                                                    닭
                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                              Query Match 56.3%; Score 1569; DB 22; Length Best Local Similarity 55.4%; Pred. No. 9.7e-136; Matches 301; Conservative 94; Mismatches 134; Indels
                                                                    418 WMDEAGELVTRDEDSDLGGTWRLGAQKCRLKADSLAFQLY-QKDVITERHRHRYEFNNQY 476
:: :||||:|| :| :|| :|| :|| :|| 470
421 -----QENIENLGGTLRLGLYPCKLKKGTKTAAAYGNEDVVQERHRHRYEFNNKY 470
                                                                                                        531 ANK 533
                  537
                                  471 RQLFEENGLVFSGVSPDNRLVEIVEIPEKQFFVACQFHPELISRPNRPQRLIKGFVGAAL 530
                                               477 LKQLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAA 536
                                                                                                                                                                                                                KHK 539
                                                                                                                                                                                                                                                                                                                                        MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPPQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                Length 536;
                                                                                                                                                                                                                                                                                                                                                               ₽4.
                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                            60
                                                                                                                                                                                                                                                                                                                                              60
```

Search completed: January 29, 2004, 15:49:45 Job time : 51.7262 secs

¥.5

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Seguence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OM protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            91:
      Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                  1825.5
1355.5
1355.5
1035.5
123.5
123.5
111.5
111.5
1109.5
109.5
109.5
109.5
109.5
109.5
109.5
109.5
109.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     seq length: 0
seq length: 20000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query
Match
BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    328717 seqs, 42310858 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 MTKF1F1TGGVVSSLGKGIA.....HALFSGFVBAAKHKTQGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-941-947A-16
2788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       January 29, 2004, 15:45:34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Issued Patents AA:*

| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compared Patents AA:*
| Compare
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Copyright
                                     GenCore version 5.1.6 (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
              US-09-252-991A-21120
US-09-328-352-7224
US-09-134-001C-4791
US-09-134-001C-4791
US-09-107-532A-6925
US-09-107-532A-4108
US-09-107-532A-4108
US-09-107-532A-5709
US-09-107-532A-5709
US-09-107-532A-5709
US-09-107-532A-5709
US-09-107-532A-51
US-09-252-991A-32742
US-09-252-991A-32742
US-09-252-991A-31403
US-09-252-991A-31403
US-09-252-991A-31403
US-09-252-991A-31403
US-09-252-991A-31403
US-09-252-991A-31403
US-09-384-51
US-09-387-334-51
US-09-134-001C-5218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1348.130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; Search time 17.0734 Seconds (without alignments)
1348.130 Million cell updates,
                  Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                  Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                             Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cell updates/sec
                  21120, A
1214, App
4191, App
4198, App
4108, Ap
4108, Ap
25369, A
27277, Appli
2, Appli
32742, A
32742, A
31403, A
4747, Ap
4747, Ap
4747, Ap
4747, Ap
5218, Appli
16679, Appli
1668, Appli
51, Appli
51, Appli
51, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WS-09-252-991A-21120
US-09-252-991A-21120
; Sequence 21120, Application US/09252991A
; Patent No. 6551795
```

4 UI	44	aP. W	42	41	40	8	œ œ	37	36	ω UI	S.	ω ω	32	31	30	29	28
99.5	99.5	99.5	99.5	99.5	99.5	100	100	100.5	100.5	100.5	100.5	100.5	101	101	101	101.5	102
3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	ω 6	3.6	3,6	3.6	3.6	3.6	⊒. 6	9. G	3.7
1169	921	858	858	551	524	1802	1044	3724	3724	1200	1151	582	775	236	236	458	1027
4	4	4	4.	4	4	41	4.	N	N	بر)	W	ı,Da) nd	44	Ų	μĒL	w
US-09-255-829-20	US-09-252-991A-32974	US-09-255-829-29	US-09-255-829-22	US-09-252-991A-24209	US-09-252-991A-27783	US-09-322-478-18	US-09-252-991A-24495	US-08-804-198-4	US-08-804-227C-10	US-08-840-006-5	US-08-840-006-6	US-09-252-991A-26782	US-07-603-133B-13	US-09-594-185-2	US-08-935-263-2	US-09-198-452A-610	US-08-446-137B-2
Sequence 20, Appl	Sequence 32974, A	Sequence 29, Appl	Sequence 22, Appl	Sequence 24209, A	Sequence 27783, A	Sequence 18, Appl	Sequence 24495, A	Sequence 4, Appli	Sequence 10, Appl	Sequence 5, Appli	Sequence 6, Appli	Sequence 26782, A	Sequence 13, Appl	Sequence 2, Appli	Sequence 2, Appli	'n	Sequence 2, Appli

ALIGNMENTS

GK 360	301 TDAYKSLNEALIHAGTHTRHKVQISYIDSBTIEAEGTAKLKNVDAILVPGGFGERGYBGK	\$ Q
B B	241 DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH	9d VQ
ğ-ğ	181 SAGELKTKPTQHSVKELRTIGIQPDILICRSBQPIPASERRKIALFTNVAEKAVISAIDA 	₽ Q
i R	121 EIKRRVYBSABGKDVALIEVGGTVGDIBSLPFLETIRQMGVELGRDRALFIHLTLVPYIK :	g &
9=9	61 VTEDGAETDLDLGHYERFLKITMTKKNNFTIGQVYEQVLRNERKGDYLGATVQVIPHITD : : :	B &
37E	1 MTKFIEITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDEGTMSEEQHGEVE :- :	B &
S	Query Match 71.9%; Score 2004; DB 4; Length 547; Best Local Similarity 71.2%; Pred. No. 2.4e-188; Matches 383; Conservative 63; Mismatches 92; Indels 0; Gaps	Query M Best Lo Matches
	21120 547 F Pseudomonas LA-21120	SEQ I LEN TYP ORG US-09-2
	PRIOR APPLICATION NUMBER: US 60/074,788 PRIOR FILING DATE: 1998-02-18 PRIOR APPLICATION NUMBER: US 60/094,190 PRIOR FILING DATE: 1998-07-27 NUMBER OF SEO ID NOS: 33142	PRIOR PRIOR PRIOR PRIOR NUMBER
	CURRENT APPLICATION NUMBER: US/09/252,991A CURRENT FILING DATE: 1999-02-18	; CURRENT
TO PSEUDOMONAS	L INFORMATION: ANT: Marc J. Rubenfield et al. OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS	; GENERAI ; APPLI ; TITLE ; TITLE

Ś 문 S В S

유

```
RESULT 2
US-09-328-352-7224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S
Matches 351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
APPLICANT: GARY L. BETCON et al.
APPLICANT: GARY L. BETCON et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO ACINETOBACTER
TITLE OF INVENTION: BAUMANNII FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: GTC99-03PA
CURRENT APPLICATION NUMBER: US/09/328,352
CURRENT FILING DATE: 1999-06-04
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS: 8252
SEQ ID NO 7224
LENGTH: 567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 7224, App
Patent No. 6562958
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM: Acinetobacter baumannii
-09-328-352-7224
                                                                                        479 QLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKH
                                                                                                                                                                                                                  383
                                                                                                                                                                                                                                                                                            323
                                                                                                                                                                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                              203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 VTEDGAETDIDLGHYERFL-KTTWTKKNNFTTGQVYEQVLKNERKGDYLGATVQVIPHIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      351;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                            ALEQAGMKISGYSSAQHLVETVELPEHPWFIAVQFHPEFTSSPRDGHPLFASFIDAA---
                                                                                                                                                                                                              KTQ 541
                                                                                                                                        LDERGELQQRSLESDLGGTMRLGAQKSELVEGTKTREVYGKAEITERHRHRYEMNNRFIE
                                                                                                                                                                MDEAGELVTRDEDSDIGGTMRIGAQXCRLKADSLAFQLYQKDVITERHRHRYEFNNQYIK
                                                                                                                                                                                                                                                                                                                            DHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVE
                                                                                                                                                                                                                                                                                                                                                                                                                                          KSAAELKTKPTQHSVKELLSIGIQPDILICRTEYDVDADTKRKIALFTNVBARAVVVCKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                              KSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNIKERVLRAGEGYDVAIVEIGGTVGDIESLPFMESVRQLMVELGHKRTMLMHLTLLPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VTEDGAETDLDLGYYERFLRRAKWTKLNNFTSGRVYQDVLNKERRGDYLGGTVQVIPHIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EQAGLKISGRSGDGALVEVVESPEHPWFVACQFHPEFTSTPRDGHPLFSGFVNAALKY 543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EAAGMKFSGKSLDGRLVEIIELPEHFWFLACQFHPEFTSTPRNGHALFSGFVEAAAKH 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATGATEIRTEASDIGGTMRLGAQECQLQTGTLVHDCYAKDVIVERHRHRYEVNNNLLPQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EAGELVTRDEDSDLGGTMELGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITEMMD
                                                                                                                                                                                                                                                                                        ELPDAYKSVNEALLHAGIKNRVKVQIDYVNAEELESQDVSILKTADAILVPGGFGERGTB
                                                                                                                                                                                                                                                                                                                                                                    AKTIYQIPRGFYEQNVDDLICERFGFTDLPEADLTDWDNVVEALLNPEYTVRVAMVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                      ADTIYRIPLLLREQGLDDLVVDQLRL-DVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Application US/09328352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; Score 1825.5; DB 4;
; Pred. No. 9.3e-171;
81; Mismatches 106;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      567;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                U)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      179
                                                              559
                                                                                                                                                                          478
                                                                                                  538
                                                                                                                                        502
                                                                                                                                                                                                                442
                                                                                                                                                                                                                                                    418
                                                                                                                                                                                                                                                                                                                              358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      480
                                                                                                                                                                                                                                                                                        382
                                                                                                                                                                                                                                                                                                                                                                  322
                                                                                                                                                                                                                                                                                                                                                                                                                                          262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CURRENT APPLICATION NUMBER: US/09/134,001C
CURRENT FILING DATE: 1998-08-13
PRIOR APPLICATION NUMBER: US 60/064,964
PRIOR PILING DATE: 1997-11-08
PRIOR APPLICATION NUMBER: US 60/055,779
PRIOR FILING DATE: 1997-08-14
PRIOR FILING DATE: 1997-08-14
NUMBER OF SEQ ID NOS: 5674
SEQ ID NO 4191
LENGTH: 561
TYPE: PRT
RESULT 4
US-09-198-452A-246
; Sequence 246, Application US/09198452A
                                                                                                                              Ś
                                                                                                                                                                        밁
                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; ORGANISM: Staphylococcus epidermidis US-09-134-001C-4191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 3
US-09-134-001C-4191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S
Matches 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 4191, Application US/09134001C Parent No. 6380370 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: LYND DOUGEtte-Stamm et al TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO STAPHYLOCOCCUS TITLE OF INVENTION: EPIDERMIDIS FOR DIAGNOSTICS AND THERAPEUTICS FILE REFERENCE: GTC-007
                                                                                                                                                                          497
                                                                                                                                                                                                              477
                                                                                                                                                                                                                                                  447
                                                                                                                                                                                                                                                                                      417
                                                                                                                                                                                                                                                                                                                            387
                                                                                                                                                                                                                                                                                                                                                                  357
                                                                                                                                                                                                                                                                                                                                                                                                        327
                                                                                                                                                                                                                                                                                                                                                                                                                                          298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              tch 56.5%; Score 1575; DB 4; al Similarity 55.6%; Pred. No. 4e-146; 302; Conservative 95; Mismatches 132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27
                                                                                                                                    KHK 539
                                                                                                                                                                                                LKQLEAAGMXFSGKSLDGRLVBIIELPBHPWFLACQFHPEFTSTPRNGHALFSGFVEAAA 536
                                                                                                                                                                                                                                                                        EMADEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQY
                                                                                                                                                                                                                                                                                                                          SEGKIAAIRYARENNIPFEGICLGMQLATVEFARHVLGYEGAHSAELDPSTEYPIIDLLP
                                                                                                                                                                                                                                                                                                                                                              VEGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLIT
                                                                                                                                                                                                                                                                                                                                                                                                                                VDHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIBABGT-AKLKNVDAILVPGGFGERG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DADTIYRIPLLLREQGLDDLVVDQLRLDVP-AADLSAWEKVVDGLTHPTDEVSIAIVGKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IKAAGEMKTKPTQHSVKELRGLGIQPDLIVVRTEYEMTQDLKDKIALFCDIKKESVIECR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BIKERVYESAB--GKDVALIEVGGTVGDIESLPFLETIRQMGVELGEDRALFIHLTLVPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVI PHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MIKFIFVTGGVVSSLGKGITAASLGRLLKDRGLKVTIQKFDPYLNVDPGTMSPYQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                          REQLESNGWVFSGTSPDGRLVEITETPKNDFFTACQFHFEFLSRPNRPQPTFKSFVEAAL
                                                                                                                                                                                                                                                                                                                                                                                                      VSLQDAYLSVVESLKHAGYPFKKDVVVKWIDSSEVNDDNVEAYLSDVDGILVPGGFGFRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DADSLYEIPLQLSKQNMDDIVIQRLQLNAKYETQLDEWKHLLNTVNNLDGKITIGLVGKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SIKERLLLAGESTNADVVITEIGGTTGDIESLPFLEAIRQIRSDLGRENVMYVHCTLLPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VTDDGAETBLDLGHYERFIDINLNKYSNVTAGKVYSHVLKKERRGDYLGGTVQVIPHITN
                                                                                                                                                                                                                                                  ----IEDLGGTLRLGLYPCHIKEGTLAEKIYNKNDIEERHRHRYEFNNEF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              95; Mismatches 132; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 561;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                        476
                                                                                                                                                                                                                                                                                                                              446
                                                                                                                                                                                                                                                                                                                                                                  416
                                                                                                                                                                                                                                                                                                                                                                                                                                          356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                120
                                                                                                                                                                            556
                                                                                                                                                                                                                                                      496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  206
```

ఠ

5

δ

Ö

8 Ş 밁 Ś

δ

1

S

맑 Ś

명 ð ď 8 Ś

```
RESULT 5
US-09-107-532A-6925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ם
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-198-452A-246
                                                                                                                                                                                                Sequence 6925, Application US/09107532A
PATENT NO. 6583275
GENERAL INFORMATION:
APPLICANY: Lynn A Doucette-Stamm
TITLE OF INVENTION: NUCLEIC ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL IMPORMATION:
APPLICANT: Griffais, R.
APPLICANT: Griffais, R.
TITLE OF INVENTION: Chlamydia pneumoniae genomic sequence and polypeptides, frag
TITLE OF INVENTION: thereof and uses thereof, in particular for the diagnosis,
TITLE OF INVENTION: and treatment of infection
FILE REPERENCE: 9710-003-999
CURRENT APPLICATION NUMBER: US/09/198,452A
CURRENT FILING DATE: 1998-11-24
NUMBER OF SEQ ID NOS: 6849
SEQ ID NO 246
LENGTH: 537
TYPE: PRT
ORGANISM: Chlamydia pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Patent No. 6559294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local Similarity
                                                                          CORRESPONDENCE ADDRESS:
ADDRESSE: GENOME THERAPEUTICS
STREET: 100 Beaver Street
CITY: Waltham
                                                                                                                                                           NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                            479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       271;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3 KFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFVT 62
                                                                                                                                                                                                                                                                                                                                                                                                                        QLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAA 535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVÆEKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IQVILDAAKEHSPDVLIVEIGGTIGDIESLPFLBAIRQERYDHSED-CLNIHMTYVPYLQ 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DGVETDLDLGHYHRFSSAALSRHSSATSGQIYARVIKREREGDYLGSTVQVIPHITNEI 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EDGAETDLDIGHYERFLK:TIMTKKNNFTTGQVYEQVLKNERKGDYLGATVQVIPHITDEI 122
                     STATE: Massachusetts
COUNTRY: USA
ZIP: 02354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HTDAYKSLNEAL IHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KRRVYESAE--GKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KCIFLTGGVVSSLGKGLTAASLALILERQRLNVAMLKLDPYLNVDPGTMNPFEHGEIYVT
                                                                                                                                                                                                                                                                                                                                                                                     SLEDHGLRIVGTCPPQGLCEIIEVSDHPWMIGVQPHPEFVSKLISPHPLFIAFIEAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EGODPLVA-----TGGTWRLGAYPCLLKPGSKAHKAYNESSLIQERHRHRYEVNPDYIQ 470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEAGELVIRDEDSDLGGIVELGAQKCRLKADSLAFQLY-QKDVITERHRHRYEFNNQYLK 478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KIAAAKFCREQGIPYFGICLGMQVLVVEYARNVLNLDQANSLEMDPNTPHPIVYV----M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITEWM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HRDAYKSIFEALTHAALRIGHAABIIPIDAB---DENLTMELSQCDACIVPGGFGVRGWEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KHTI YEMPLMLAQEKIANFIGEKLKLATVPENLDDWRVLVNQLSQDLPKVKIGVVGKYVQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -DTIVRIPLLLREQGLDDLVVDQURLDVPAADLSAWEKVVDGLTHFTDEVSIAIVGKYVD 299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AADEVKSKPTQHSVQTLRGIGIIPDAILCRSEKPLTQEVKSKISLFCNVPNRAVFNVIDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          48.6%; Score 1355.5; DB 4
50.5%; Pred. No. 1.5e-124;
                                                                                                                                                           ENTEROCOCCUS
: 7310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       95; Mismatches 154;
                                                                                                                                                                               and David Bush
AND AMINO ACID SEQUENCES
FAECIUM FOR DIAGNOSTICS F
                                                                                                                       CORPORATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 4; Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         17;
                                                                                                                                                                                   Đ
                                                                                                                                                                                                    RELATING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                   THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         fragment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          prev
RESULT 6
US-09-107-532A-4108
; Sequence 4108, Application US/091v--
; Patent No. 6583275
; GENERAL INFORMATION:
APPLICANT: Lynn A Doucette-Stamm and TITLE OF INVENTION: NUCLEIC ACID ANT ENTEROCOCCUS FA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; NAME/KEY: misc_feature; LOCATION: (B) LOCATION 1...3; SEQUENCE DESCRIPTION: SEQ ID NO: US-09-107-532A-6925
                                                                                                                                                                                                                                                                                                                            D
                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                         먕
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Best Local Similarity
Matches 197; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                INFORMATION FOR SEQ ID NO: 6925:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER: PC
OPERATING SYSTEM: <Unknown>
SOFTWARE: ASCII
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/107,532A
FILING DATE: 30-Jun-1998
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: 60/085,598
FILING DATE: 14 May 1998
APPLICATION NUMBER: 60/051571
FILING DATE: July 2, 1997
ATTORNSEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MOLECULE TYPE: protein HYPOTHETICAL: YES ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAMÉ: Ariniello, Pamela Deneke
REGISTRATION NUMBER: 40,489
REFERENCE/DOCKET NUMBER: GTC-0:
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER READABLE FORM:
MEDIUM TYPE: CD/ROM ISO9660
COMPUTER: PC
                                                                                                                                                                                                                                               307
                                                                                                                                                                                                                                                                                     299
                                                                                                                                                                                                                                                                                                                            247
                                                                                                                                                                                                                                                                                                                                                                  239
                                                                                                                                                                                                                                                                                                                                                                                                           187
                                                                                                                                                                                                                                                                                                                                                                                                                                                 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VTEDGAETDLDLGHYERFLKTIMIKKNNFTIGQVYEQVLRNERKGDYLGATVQVIPHITD 120
                                                                                                                                                                                                                                               ELPDAYISVVEALKHILVSPIIQTSRSIGSKHK 339
                                                                                                                                                                                                                                                                                     DHTDAYKSLNEALIH-----AGIHTRHK 321
                                                                                                                                                                                                                                                                                                                                                                  DADTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV 298
                                                                                                                                                                                                                                                                                                                                                                                                         LKAAGEMKTKPTOHSVKELRGLGIQPNILVVRTEQPVSQSVKNKLAQPCDVEPEAVIESP 246
                                                                                                                                                                                                                                                                                                                                                                                                                            | IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EIKEKIMRAAKMTDSDVIITEVGGTVGDIESLPFLEALRQMKADVGTDNVMYIHTTLIPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BIKRRVYESAE--GKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPY 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VTDDGAETDLDLGHYERFIDINLNKYSNVTTGKIYSEVLRKERKGEYLGATVQVIPHITN 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MTKYIFVTGGVVSSIGKGIVAASLGRLLKURGLKVTIQKFDFYINVDFGTMSFYQHGEVF
                                                                                                                                                                                                                                                                                                                            DVDTLYSIPLVLQAQGMDQIVCDHLKLDTPEADMTEWKELEERVLNLKKKVRIALVGKYV 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH: 340 amino acids TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM: Enterococcus faecium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEPHONE: (781)893-5007
TELEFAX: (781)893-8277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    37.3%; Score 1039; DB 4; 59.2%; Pred. No. 9.7e-94;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GTC-012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ..340
ID: 6925:
```

DB 4;

Length 340; Indels

12;

Gaps

66

```
and David Sush
AND AMINO ACID SEQUENCES RELATING TO
FAECIUM FOR DIAGNOSTICS AND THERAPEUTICS
```

```
US-09-252-991A-25369
; Sequence 25369, Application US/09252991A
; Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-107-532A-4108
                   GENERAL INFORMATION:
APPLICANT: MARC J. Rubenfield et al.
APPLICANT: MARC J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
       CURRENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEFAX: (781)893-8277 INFORMATION FOR SEQ ID NO: 4108:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: 60/085,598
FILING DATE: 14 May 1998
APPLICATION NUMBER: 60/051571
FILING DATE: July 2, 1997
ATTORNEY/AGENT INFORMATION:
NAME: Ariniello, Pamela Deneke
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/107,532A
FILING DATE: 30-Jun-1998
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME: Ariniello, Pamela Deneke
REGISTRATION NUMBER: 40,489
REFERENCE/DOCKET NUMBER: GTC-012
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY: misc_feature
LOCATION: (B) LOCATION 1...226
SEQUENCE DESCRIPTION: SEQ ID NO: 4108:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TOPOLOGY: linear MOLECULE TYPE: protein HYPOTHETICAL: YES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ZIP: 02354
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CORRESPONDENCE ADDRESS:
ADDRESSEE: GENOME THERAPEUTICS CORPORATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                           175
                                                                                                                                                                                                                                                                                                                                                               ils enlggtlrlglypckikkgtktaeayggadvvgerhrhryefnnkyrglfeegglvfsgv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           110;
                                                                                                                                                                                                                                                                                                                                                                                                             432 SDLGGTMRLGAQKCRLKADSLAFQLY-QKDVITERHRHRYBFNNQYLKQLBAAGMKFSGK 490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    372 IPYLGICLEXQSAVIEFARNYVGLEGAHSTEFLPKSPHPVIGLITEMMDEAGELVTRDED 431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          313 HAGIHTRHKVQISYIDSETIEAEGT-AKLKNVDAILVPGGFGERGVEGKISTVRFARENK 371
APPLICATION NUMBER: US/09/252,991A
                                                                                                                                                                                                                                                                                                                                                                                                                                                      65 VPFLGICLGWQWACVEFARNVVGLEDASSABTNPDTANNIIDLMAD------QENI 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                      SPDNRLVBIVELPEKKPFVGCQFHFELISRPNRPQKLIKAFVGASLADHETK 226
                                                                                                                                                                                                                                                                                                     SLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAA-AKHKTQ 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HSGFAYNSDIBIDWIKAQELTRENVEERLKDADGILVPGGFGDRGVEGKIEAIRYAREND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             OPERATING SYSTEM: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CITY: Waltham
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM: Enterococcus faecium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TELEPHONE: (781)893-5007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             100 Beaver Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                19.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CD/ROM ISO9660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 544.5; DB 4;
Pred. No. 2.2e-45;
71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 4; Length 226;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                   궁
                                                                     PSEUDOMONAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  64
                                                                                                                                                                                                                                                                                                                                                                  174
```

밁

맑 Ş 밁 Ş 밁 S

```
US-09-107-532A-5709
Sequence 5709, Application US/09107532A
Patent No. 6583275
GENERAL INFORMATION:
APPLICANT: Lynn A Doucette-Stamm
TITLE OF INVENTION: NUCLEIC ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; PRIOR FILING DATE: 199; NUMBER OF SEQ ID NOS; SEQ ID NO 25369
LENGTH: 373
; TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-252-991A-25369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT FILING DATE: 1999-U2-1U
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
PRIOR FILING DATE: 1998-07-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local Similarity es 72; Conserv
                                                                                                                                APPLICATION NUMBER: 60/085,598
FILING DATE: 14 May 1998
APPLICATION NUMBER: 60/051571
FILING DATE: July 2, 1997
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                           CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/107,532A
FILING DATE: 30-Jun-1998
                                                      TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                           PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                              ZIP: 02354
COMPUTER REALABLE FORM:
MEDIUM TYPE: CD/ROM IS09660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQUENCES: 7310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  523
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      138 EHPHSDQAVIAALPCALLEAREDV-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             283 THPTDEVSIAIVGKYVDHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKN 342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            343 VDAILVPGGFGERGVEGKISTVRFARENKIPYLGICKANOSAVIEFARNVVGLEGAHSTE 402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20
                                                                                                                                                                                                                                                                                                                                           COMPUTER: PC
OPERATING SYSTEM: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VLPPLPKAFVEAC --- RTQ 253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NGHALFSGFVEAAAKHKTO 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TERHRHRYEFNNQYLKQLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPR 522
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FLPKSPHPVIGLITEWMDEAGBLVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVI 462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TPPAAPLRIALVGDHDPHITAHRAIPLALRLAGEALGLEIAFDWLASDRLPAE--PALER 77
                                                                          NAME: Ariniello, Pamela Deneke
REGISTRATION NUMBER: 40,489
REFERENCE/DOCKET NUMBER: GTC-012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         YDGFWCVPGSPYRDADAVLRLIAHARGRRRPFLGTCAGFQHTILEFARNALGWQAATHGE 137
TELEPHONE: (781/893-8277
                                                                                                                                                                                                                                                                                                                            SOFTWARE: ASCI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CITY: Waltham
STATE: Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EADYHCRYAIAPRFAABLTGGALRASAWSADG-AIRAVELEQHPFFVATLFQPBRAAVAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                      COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STREET: 100 Beaver Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7.9%; Score 220.5; DB 4; 27.8%; Pred. No. 3.9e-13; ative 38; Mismatches 124;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENOME THERAPEUTICS CORPORATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ENTEROCOCCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and David Bush AND AMINO ACID SEQUENCES RELATING TO FAECIUM FOR DIAGNOSTICS AND THERAPEUT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 373;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RLLRGSRLALAYAADWI 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4
```

```
RESULT 9
US-09-252-991A-27277
                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-107-532A-5709
                                                        GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: Marc J. Rubenfield et al.
APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVESTION: ARRUGINGSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
FILE REFERENCE: 107196.136
                                                                                                                                                                                       Sequence 27277, Application US/09252991A Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity
Matches 115; Conserv
FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 INFORMATION FOR SEQ ID NO: 5709:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HYPOTHETICAL: YES
ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: misc feature
LOCATION: (B) LOCATION 1...830
SEQUENCE DESCRIPTION: SEQ ID NO: 5709:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TOPOLOGY: linear MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           258 MGSLVAGTKYRGEFEDRMKKV----IDEIYN------DGQVILFIDELHTLIGAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                       DHKAMQKRILEE----LKKAFRPEF 715
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AEGAIDASN---ILKPALARGELQTIGATTLDEYQKYIEKDSALERRFARIQVDEPTPEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGIMSPFQHGEV--FVTE-----DG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AVISFARNVVGLEGAHSTEFLPKSPHPVIGLITEWMDBAGELVTRDEDSDLGGTMRLGAQ 443
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     --IDEŚĄĄKVRLDQTDHLTKS-TVIKLEIDELVQEKEĄĄIQKQD-----PENĄĄCLRRQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VPYIKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AETDLDLGHYERFLKTTMTKKNNFTTGQV----YEQVLRNERKGDYLGATVQVIPHITDE
                                                                                                                                                                                                                                                                                                                                                             DGRIVEIIELPEHPWFLACQFHPEF 517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KKESERLLBLBGLLHE----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EKALRKKLQKVSAIBAK---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EKAV-----ISAIDADTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKV-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AEVILOGLETRYEEHHGVEITDEAVRAAVN--LSVRYI-TSROL-----PDKAIDL----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IK-----RRVYESAEGKDVALIEVGGTVGDIESLPFLETIROMGVELGRDRALFIHLTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH: 830 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                        KAHPDVFNLLLQVLDDGHLTDSKGRKVDFRNTIMIMISNIGATQIREEKNVGFNVQDVTK 694
                                                                                                                                                                                                                                                                                                                                                                                                                                                KCRIKADSLAFQLYQKDVITERHRHRYEFNN---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -----RSGLKDPDRPIGSFMFLGPTGVGKTELAKALSEVMFGSEDAL-----IRV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ETISAEGTAKLKNVD-----AILVPGGFGERGVEGKISTVRFARENKIPYLGICLGMQS 383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -----VDGLTHPTDEVSIAIVGKYVDHTDAYKSLNEALIHAGIHTRHKVQISYIDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Enterococcus faecium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4.4%; Score 123.5; DB 4; 20.4%; Pred. No. 0.0051; tive 80; Mismatches 201;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----RVVGQDEAVKAVSRAIRRA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -QEQGYSDRVTEB---DV-ATVVSEWTGVPLQQLB
                                                                                                                                                                                                                                                                                                                                                                                                                                              ----QYLKQLEAAGMKFSGKSL 492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 830;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels 169;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 27;
```

```
S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 10
US-08-116-098-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; TYPE: PRT ; ORGANISM: Pseudomonas aeruginosa US-09-252-991A-27277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 27277
LENGTH: 401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sequence 2, Application US/08116098
Patent No. 5428131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                             COMPUTER READABLE FORM:
MEDIUM TYPE: Flopy disk
MEDIUM TYPE: Flopy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARB: PatentIn Release #1.0, Version
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/116,098
                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Trent, Jonathan D.
APPLICANT: Horwich, Arthur L.
TITLE OF INVENTION: Archaebacterial Chaperonin-Mediated
TITLE OF INVENTION: Protein Stabilization
                                                                              FILING DATE:
CLASSIFICATION: 536
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                       NUMBER OF SEQUENCES: 2
APPLICATION NUMBER:
FILING DATE: 09-SEP-
APPLICATION NUMBER:
FILING DATE: 27-JUN-
                                                                                                                                                                                                                                                                                                                                                             CITY: Atlanta
                                                                                                                                                                                                                                                                                                                                                                                                     ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        274 AWEKVVDGL---THPTDEVSIAIVGKYVDHTDAYK-----SLNEALIHAGIHTRHKVQIS 325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   133 IAGIDT-RRITRILREKGSQNGCILAGADATEERALELARAFPGIKGMDLAKEVTTAERY 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           82;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BHPWFLACQFHPBFTSTPRNGHALFSGFVEAAAKHK 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VVPAQTPASEVLA--LNPDGIFLSNGPGDPEPCDYAIQAIREFLDTEIPVFGICLGHQLL 298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   YIDSETIEAEGTAKLKNVDAILVPGGFGE-RGVEGKISTVRFARENKIPYLGICLGMQ-S 383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AIDADTIYRIPLLLREQGLDD-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PHIGHTG---TTPEDAEANRVWAAG-----LIIRDLPLIASHWRSKQSLPDYLKANGTVA 132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ALASGAKTLKMGHGHHGAN-----HPV--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NHGFAVDESTL----PDNLRATHKSLFDGTLQGIERTDKVAFSFQG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AVIEFARNIVIGLEGAHSTEFLEKSPHEVIGLITEWMDEAGELVTRDEDSDLGGTWRLGAQ 443
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PYIKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVIS 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KCRLKADSLAFQLYQXDVITERHRHRYEFNNOYLKQLEAAGMKFSGKSLDGRLVEIIELP 503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EWRSSVWNLESDSHP--EIP---AGELPYHVVAYDYGVKLNILRMLVARG-----CRLS
                                                                                                                                                                                                                                                                                                                                       Georgia
                                                                                                                                                                                                                                                                                                                                                                                 E: Kilpatrick & Cody
1100 Peachtree Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ----HPEASFGPHDVAPLFDRFISAMAERR
                 09-SEP-1991
UMBER: US 07/721974
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4.3%; Score 120; DB 4; Length 401; 20.7%; Pred. No. 0.0034;
                                                              US 07/756627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      153;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----LVVDQLRLDVPAADLS 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels 108;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -QDLDS---GVVMITSQ 333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  240
```

```
US-08-116-098-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches 129;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS: LENGTH: 552 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FRAGMENT TYPE:
ORIGINAL SOURCE:
ORGANISM: Sul
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MOLECULE MYPOTHETICAL: M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE: 24-OCT-1988
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: US 0
FILING DATE: 18-MAR-1991
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 0
FILING DATE: 24-OCT-1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME: Pabst, Patrea L. REGISTRATION NUMBER: 31 REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRANDEDNESS: single TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEPHONE:
                                                                                                                                                                                                                                                                                                          272
                                                                                                                                                                                                                                                                                                                                                                                              213
499 IIELPEHPWFL 509
                                                                                                                                                                                                                332 RATGGRVISNIDELTSQDLGYAALVEERKVGEDKWYFVEGAKN----PKSVSILIRGGLE 387
                                                                                                                                                                                                                                                                                                                                            332 --- IEAEGTAKLKNVDAILVPGG----FGERGVE------GKISTVRFARENKIPYLG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   167 SLGSKAVAGA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        126
                                                                                                                                                                                                                                                                                                                                                                                                                                 280 DGLTHPTDEVSIAIVGKYVDHTDAYKSLNEALIHAGIHTRHKVQISYIDSET-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   228 NVAEKAVISAIDADTIYRIPLLLREQGLDDLVVD-----QLRLDVPAADLSAWE--KVV 279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           172 HLT-LVPYIKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASER----RKIALFT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             112 VQVIPHITDEIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFI 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         63 ---GDITITNDGATILDKMDLQH------PTGKLLVQIAKGQ------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  54 FQHGEVFVTEDGAE--TDLDLGHYERFLKTTWTKKNNFTTGQVYEQVLRNERKGDYLGAT 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5 IFITGGVVSSLGKGIAASSLAAI--LED-----RGL-KVTITKLDPYINVDPGTMSP
                                         ANAI EGLIMI LAENAGLDPIDKLMQLRSLHENETNKWYGLNL-----FTGN---
                                                                                       QKOV---
                                                                                                                           RVVDET-ERALRDALGTVADVIRDGRAVAGGGAVEIEIAKRLRKYAPQVGGKEQLAIEAY 446
                                                                                                                                                                       EWMDEAGELVTRDEDSDLGGTMRLG-----
                                                                                                                                                                                                                                                                                                HKFLEEEENILKEKVDKIAATGANVVICQKGIDEVAQHYLAKKGILAVRRAKKSDLEKLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HETTIVSGYKKAEEIALKTIQ----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   amino acid
                                                                                                                                                                                                                                                              ICLGMQ-----
                                                                                                                                                                                                                                                                                                                                                                                        GGSINDTQLVYGIVVDKEVVHPGMPKRIENAKI-ALLDASLEVEKPELDAEIRINDPTQM 271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IILKEGSSRTYGKEALRANIAAVKAIEEALKSTYGPRGMDKMFVDSL------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4.0%; Score 111.5; D
1larity 21.1%; Pred. No. 0.04;
Conservative 73; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          404-815-6555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sulfolobus shibatae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              . protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 404-815-6508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N-terminal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US 07/261573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        31,284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -ETADGTKTAVILAGELAKKAEDLLYKE----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  07/673158
                                                                                                                                                                                                                                                         ----SAVIEFAR----NVVGLEGAHSTEFLPKSPHPVI-GLIT 416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -----REYLADLVVKAVAQVAELRGDKWYVDLDNVQIVKKH 212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           YU102
                                                                                  -ITERHRHRYEFNNOYLKOLEAAGMKFSGKSLDGRLVE 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----AQPVSINDTDVLRKVAL-T
                                                                                                                                                                     -----AQKCRLKA-----DSLAFQLY 457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     176;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels 233;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 552;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                           492
                                                                                                                                                                                                                                                                                                                                              376
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           227
                                                                                                                                                                                                                                                                                                                                                                                                                                   331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  31,
```

무 Ś 맑

g Ś 밁 Ś 맒 S S

₽ ફ ₽ Ś

```
맑
                               S
                                                               밁
                                                                                                 Ś
                                                                                                                                  문
                                                                                                                                                             Ş
                                                                                                                                                                                                  닭
                                                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                     US-08-687-590-32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-08-687-590-32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 32, Application No. 6255070
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: GB 9418234.2 FILING DATE: 09-SEP-1994 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: GB 9
FILING DATE: 31-JAN-1994
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION DATA:
APPLICATION NUMBER: PCT/
FILING DATE: 31-JAN-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STREET: Iwo
CITY: San Francisco
STATE: California
Third Stat
                                                                                                                                                                                                                                                                                                                                                                                                                    MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE: PatentIn Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC Compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE/DOCKET NUMBER: 01
                                                                                                                                                                                                                                                                                                                                                                                                                                   TOPOLOGY: lin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME: Bastian, Kevin L.
REGISTRATION NUMBER: 34,774
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: US/08/687,590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LE OF INVENTION:
                             228 NVAEKAVISAIDADTIYRIPLLLREQGLDDLVVD-----QLRLDVPAADLSAWB--KVV
                                                                                                                                                                                                                                                                                                                             al Similarity 21.1%; Pred. No. 0.04; 129; Conservative 73; Mismatches
                                                                                                                                                                112 VQVIPHITDEIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFI 171
                                                                                                                                    96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 493
                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                54 FQHGEVFVTEDGAE--TDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGAT 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   amino acid
   SLGSKAVAGA---
                                                                   HPTIIVSGYKKABBIALKTIQ
                                                                                                                                                                                                                                                                   IILKEGSSRTYGKEALRANIAAVKAIEEALKSTYGPRGMDKMFVDSL--
                                                                                                 HLT-LVPYIKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASER----RKIALFT 227
                                                                                                                                -----DB-----ETADGTKTAVILAGELAKKAEDLLYKE----------I
                                                                                                                                                                                                  ---GDITITNDGATILDKWDLQH-----
                                                                                                                                                                                                                                                                                                 IFITGGVVSSLGKGIAASSLAAI--LED-----RGL-KVTITKLDPYINVDPGTMSP 53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ----PEDMWKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IE: Townsend and Townsend and Crew LLP
Two Embarcadero Center, Eighth Floor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Application US/08687590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     552 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MATIO...
Willison, No...
"Ata, Hiroshi
"lan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ashworth, Alan
Ashworth, Alan
VENTION: Folding Proteins
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           United States of America
                                                                                                                                                                                                                                                                                                                                                                                                                                       linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    31-JUL-1996
                                                                                                                                                                                                                                                                                                                                                                                                                    peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                 single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GB 9401791.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PCT/GB95/00192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    084619-000000US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Robert
 -REYLADIVVKAVAQVABIRGDKWYVDLDNVQIVKKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Version
                                                                                                                                                                                                  ----PTGKLLVQIAKGQ------
                                                                                                                                                                                                                                                                                                                                                                DB 3;
                                                                                                                                                                                                                                                                                                                                  176;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         #1.25
                                                                 -AQPVSINDTDVLRKVAL-T
                                                                                                                                                                                                                                                                                                                                                               Length 552;
                                                                                                                                                                                                                                                                                                                                  Indels 233;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (EPO)
212
                                                                 166
                                                                                                                                  125
                                                                                                                                                                                                                                                                   62
                                                                                                                                                                                                  95
                                                                                                                                                                                                                                                                                                                                  31
```

```
RESULT 12
US-09-066-046-2
; Sequence 2, Application US/09066046A
; Patent No. 6204252
; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      片
SEQUENCE DESCRIPTION: SEQ ID NO: US-09-066-046-2
                                                                                                                                                                                       TELEPAX: (617) 526-5
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                               MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Ver:
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/066,046A
APPLICATION NUMBER: US/09/066,046A
PILING DATE: 24-Apr-1998
PILING DATE: 24-Apr-1998
CLASSIFICATION: <Unknown>
ATTORNEY/AGENT INFORMATION:
NAME: Superbo, Colleen
REGISTRATTON NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ZIP: 02109
COMPUTER READABLE FORM:
MEDIUM TYPE: Flopp
                                          HYPOTHETICAL: NO ANTI-SENSE: NO
                                                                             TOPOLOGY: linear
MOLECULE TYPE: DNA (genomic)
                                                                                                                                                                                                                                                                     REGISTRATION NUMBER: 39,850
REFERENCE/DOCKET NUMBER: 10
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQUENCES: 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     بري
2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4 ± 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HKFLEEBENILKEKVDKIAATGANVVICOKGIDEVAQHYLAKKGILAVRRAKKSDLEKLA 331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DGLTHPTDEVSIAIVGKYVDHTDAYKSLNEALIHAGIHTRHKVQISYIDSET-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IIELPEHPWFL 509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RVVDET-ERALRDALGTVADVIRDGRAVAGGGAVEIBIÁKRLRKYÁPQVGGKEQLÁIBAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EWMDEAGELVTRDEDSDLGGTMRLG-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RATGGRVISNIDELTSODLGYAALVEERKVGEDKMVFVEGAKN----PKSVSILIRGGLE 387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ICLONO-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGSINDTQLVYGIVVDKEVVHPGMPKRIENAKI-ALLDASLEVEKPELDAEIRINDPTQM 271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----PEDMWKI 499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ANAIEGLIMILAENAGLDPIDKLMQLRSLHENETNKWYGLNL----FTGN---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ---IEAEGTAKLKNVDAILVPGG----FGERGVE------GKISTVRFARENKIPYLG 376
                                                                                                                                             LENGTH: 619 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CITY: Boston
STATE: MA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STREET: 60 State Street
                                                                                                                       STRANDEDNESS: single
                                                                                                                                                                                                                                                     TELEPHONE: (617) 526-6000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COUNTRY: United States
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE: HALE AND DORR LLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COUGHLIN, Richard T.
INVENTION: CHARACTERIZATION OF GRANULOCYTIC
EHRLICHIA AND METHODS OF USE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MURPHY, Cheryl
STOREY, James
BELTZ, Gerald A.
                                                                                                                                                                                                                                 526-5000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ----SAVIEFAR----NVVGLEGAHSTEFLPKSPHPVI-GLIT 416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -- ITERHRHRYEFNNOYLKQLEAAGMKFSGKSLDGRLVE 498
                                                                                                                                                                                                                                                                                             106.941.155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -AQKCRLKA-----DSLAFQLY 457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                331
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                   Ś
                                                        밁
                                                                                        Ś
                                                                                                                           밁
                                                                                                                                                            S
                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                    ; ORGANISM: Acinetobacter baumannii US-09-328-352-7885
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 13
US-09-328-352-7885
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             당
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                  CURRENT APPLICATION NUMBER: US/09/328,352
CURRENT FILING DATE: 1999-06-04
NUMBER OF SEQ ID NOS: 8252
SEQ ID NO 7885
LENGTH: 1407
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Patent No. 6562958
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 7885,
                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: GATY L. Breton et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO ACINETOBACTER
TITLE OF INVENTION: BAUMANNII FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: GTC99-03PA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Similarity
                                                                                                                                                                                                                                                                                              Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         357 VEGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPH-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              808
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            283 LLANEE-----SKTLESMP--SDSLEDNVQELGTLPLQEGETVSEGNTRESLPTDVSQDS
112 VQVIPHITDBIK---RRVYESABGKDV-----ALIEVGGTVGDIB-SLPFLETIRQMGVE 162 : : | | | :: | :| :| :| :| :|
                                                                                                                                                                                                       157
                                                                                                                             216 LREEIPOTTSETKLKKASKRLKLMEAFKDSNNKPEWMVMNVLPVLPPDLRPLVPLEGGRF 275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        44 INVDPGTMSP-FOHGEVFVTEDGAETDLDLGHYERFLKTTMTKKKNNFTTGQVYEQ-----
                                                                                                                                                                                                                                         41 DPYINVDPGTMSPF-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VLRNERKGDYLGATVQVIPHITDEIKRRVYE-----SAEGK------DVALIE 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VQVESSIIVPESQHTDVTVLEDTTETITVDGEYGHFSDIASGEHNNDLPAMLLDEADFTM 282
                                                        ATSDLNDLYRRVINRNNRLKRLLDLAAPDIIVRNEKRMLQESVDALLDNGRRGRAITGSN 335
                                                                                                                                                                                                       ESYVVTDPG-WTPFEKYQLLNDEEYFTALEEHGDBFVAKKGAEAVQDLLKDIDLEABISR 215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STQDAPSTGVEIREMD-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STD-LEVHSQEVEIVSEGGTQDSLSTNISQ-DSVGVSTDLEAHSKGVEIV-----SEGG 559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SQEVEIVSEGGTQDSLSTNISQDSVGVSTDLEAHSQBVETVSEFTQDSLSTNISQDSVGV 507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      YRIPLLIREQGLDDLVVDQLRLDV--PAADLSAWEKVVDGLTHPTDE-----VSIAIVGK 296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ---TQDSLSADFPINTVESESTDLEAHSQEVETVSEFTQDSLSTNISQDSVGVSTDLEVH 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TKPTQHSVK---ELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDADTI 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VGVSTDLEAHSQEVETVSEVSTQDSLSTNISQDSVGVSTD--LEAHSKGVEIVSEGG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                YVDHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIBABGTAKLKNVDAILVPGGFGERG 356
                                                                                                                                                                      -YERFLKTTMTKK---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----PVIGLITEWMDEAGELVTRDEDSDL 434
                                                                                            TT---GQVYEQVL----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TODSLSA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4.0%; Score 111.5; DB 3; ilarity 21.1%; Pred. No. 0.048; Conservative 62; Mismatches 178;
                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Application US/09328352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----GTVGDIESLPFLET-IROMGVELGRDRALFIHLTLVPYIKSAGELK 186
                                                                                                                                                                                                                                                                                              19.8%;
                                                                                                                                                                                                                                                                              91;
                                                                                                                                                                                                                                                                              Score 109.5; D
Pred. No. 0.29;
1; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -RDSDDDV 616
                                                                                                                                                                                                                                           ----OHGEVFVTEDGAET-----DLDLGH----
                                                                                                                                                                          -NA----
                                                                                                RNE---
                                                                                                                                                                                                                                                                                                                   DB 4;
                                                                                                                                                                                                                                                                                223;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 619;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels 115;
                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                   Length 1407;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STDLEAHSPEGEIVSEV 593
                                                                                                                                                                                                                                                                                  249;
                                                                                                -RKGDYL-GAT 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                        E 89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            97
                                                                                                                                                                                                                                                 74
```

245

207

295

```
Ś
                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                              S
                                                                                                                                                                   밁
                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 14
US-09-252-991A-32742
                                                                                                                                                                                                                                                                                                                             ; ORGANISM: Pseudomonas aeruginosa US-09-252-991A-32742
                                                                                                                                                                                                                                                                                                                                                                                 PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 32742
LENGTH: 809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 32742, Application US/09252991A Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
                                                                                                                                                                                                                                                  Matches 126;
                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Marc J.
TITLE OF INVENTION:
TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     610 EMTKKNISKLINSCYRKLÖLKDTVÍ-FÁDQLMYLGFRQATRSGVSVGMEDMLIPPTKHTI
                                                                                           79 GORTDVLAAGOALGEORAGAPFVGDVVDALAHOLAEVLSAVGNPFDVAVAADEAVEVRPV
                                                                                                                                                                        19
                                                                                                                                                                                                           42 PYINVDPGTMSPFQHGEVFVTEDGA-----ETDLDLGHYERFLKTTMTKKNNFTTGQVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RALMMSTNNILSPANGEPIIVPSQDV----VLGLYYITRDAVNAKGEGMVFADTHEVNRAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WEKVV------DGLTHPTDEVSIAIVGKYVDHTDAYKSLNEALIHA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LHRLGLQAFEPI-----LIEGKAIRLHFLVCAAFNA-DFDGDQMAVHVFLTLEÄQLEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SERRKIALFTNVAEKAVISAIDADTIYRIPLLLREQGLDDLVVDQLRLDVP---AADLSA 274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATGQVAIHARVKVR----VHQTVINENGEREQQTIIVDTTPGRCLLWEVVPEGLSFDMINL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ----GIHTRHKVQISYIDSETIEAEGTAKLKWVDAILVPG-----GFGERGVEGKISTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LFKP---FIFAKLQASGQATTIKAAKKMVBRETPEVWDVLASVIRQHPVMLNRA----PT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KRPLKSLADMIKGKQGRFRQNLLGKRVDYSGRSVITVGPTLRLHQCGLP-----KKMALE
                AFAEQQPAAIAGEVAEGLDAHRPLAVVEDRHVLAQHRLGGKRQVAIARGRAV----
                                                                                                                                                                        PGVRAVAGEAPIVAHAVVQPTLDAAVVAIATQGPVDLVHLRRQRRVPRDRHPQVVHRQRF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KANFREGLTVLQY---FIST----HGARKGLADTALKTANSG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHKTQG 542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LVKNKQGEDEKQK---SFNSIYMMSDSGARGSAAQIRQL--AGMRGLMAKPDGSIIETPI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LYQ-KDVITERHRHRYEFNNQY---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IDKAETEVREIEQQFEQGFVT----AGERYNKVVDI----WARTNDQVAKAMMDNLSYT 719
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RFARENKIPYLGIC---LGMQSAVIEFARNVVGLEGAHSTE-----FLPKSPHPV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LGRDRALFIHLTL-----VPYIKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPA
                                                                                                                              -----EQVLRNERKG-DYLGATYQVIPHITDEIKRRV-----YBSAEGKDV 135
                                                                                                                                                                                                                                                  Conservative
                                                        -VGGTVGD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rubenfield et al.

NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING
AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                   3.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GLITEWMDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQ 455
                                                                                                                                                                                                                                            74; Mismatches
                                                                                                                                                                                                                                                                   Score 109; DB 4; Length 809; Pred. No. 0.13;
                                                        -----IBSLPFLETIRQMG---VELGRDRALFIHLTLVP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ------LKQLEAAGMKFSGKSLDGRLVBI-I
                                                                                                                                                                                                                                                  203;
                                                                                                                                                                                                                                                  Indels 252;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           궁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PSEUDOMONAS
                                                        177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        443
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                $52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      314
                                                                                             138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 774
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         364
                                                                                                                                                                        78
                                                                                                                                                                                                               95
                                                                                                                                                                                                                                                    μ
                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 21763
LENGTH: 1700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 15
US-09-252-991A-21763
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                     밁
                                                                                           ð
                                                                                                                                    밁
                                                                                                                                                                 Ş
                                                                                                                                                                                                             뮹
                                                                                                                                                                                                                                                                                                                                                                    ; ORGANISM: Pseudomonas aeruginosa US-09-252-991A-21763
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밇
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    먾
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         뮹
                S
                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 21763, Application US/09252991A Patent No. 6551795
                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILE REFERENCE: 107196.136
                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  246
                  253
                                                          649
                                                                                                                                                                        166 DRALFIHLTLVPYIKSAGE-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     178 YIKSAGELKIKPT-
                                                                                                                                                                                                                                                                                            84;
                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LITEMMDEAGELVTRDEDSD----LGGTMRLGAQKCRLKADSLAFQLYQKDVITB-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VYRIVAIADGLRS:CQAAQQ-PSABRQPAGLHGSGVAGRGGEQVAGAVDGD-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ---EVH---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SGKSLDGRLVEIIELPEHPWFL----ACQFH--PEFTSTPR---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AALQ-ADDAIDLVVAPGDQDDPHLGAHPQLAGQGQAVLAGQADVQQHQLDRLASMGALGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ENKIPYLGICLGMQSAVIEFARNVVGLEGA------HSTEFLPKSPHPVIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EALIHAGIHTRHKVQISYIDSETIBABGTAKLKNVDAILVPGGFGERGVEGKISTVRFAR 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ----GQYQVDPSGGGVEQAAPPVAQHHHLDPVAQRAEQPLHQLRRQPPDLLAVAPGDRR
QGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHTDAYKSLNEALI 312
                                                          ALAGARHHRVADQPL---
                                                                                                                                EDELAVHLDLFQPHDVVGQRRHLLRAQTHTQLQVQLVLVSDGVVHQVAEQRLVAAQPIDV
                                                                                                                                                                                                             AVVEVVGR-----RREVVPRAQGADVMQVAAAHQLHVAALDQRTVGCQPTLRLGQVDHRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGFRILGVAGAEDVIALLAE IGLEKI TNHRVVVDHQYARNHRHHLAPPAGRGVSCSGLSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REQGIDDLVVDQLRIDVPAADIS--AWEKVVDGLTHPTDEVSIAIVGKYVDHTDAYKSIN 308
                                                                                             LICR----SEQPIPASERRKIALFTNVAEKAVIS----AIDADTIYRIPLLL----RE
                                                                                                                                                                                                                                                    ATVQVIPHITDEIKRRVYESABGKDVALIEVGGTVG----DIESLPFLETIRQMGVELGR
                                                                                                                                                                                                                                                                                          3.9%;
llarity 22.0%;
Conservative ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -----ICRSEOPIPASERRKIALF-TNVAEKA---VISAIDADTIYRIPLLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              - VGVQQPVAELPEGLPGGAGAGLGMAHPADQILRPRHQFARVQRLDHVIVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -DQLRFGRVVAQLATQAADQHVDG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              - PLPAAAYPLLNGRSTSFHRTPEAAMGARLQAIHPGLANLHAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -----QLVAAQGKPAVAQESAEQLEFAMGEQGFVARVV-----
                                                                                                                                                                                                                                                                                          %; Score 107.5; Di
%; Pred. No. 0.64;
43; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----RHR----
                                                          LVETVAEALLASVRVHAQAAEQVVRVEELLQFGERR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -HRYEFNNQYL-----KQLEAAGMKF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -OHSVKELRTIGIO-PDIL-----
                                                                                                                                                                                                                                                                                                                                 DB 4;
                                                                                                                                                                                                                                                                                              158;
                                                                                                                                                                            LKTKPTOHSVKELRTIGIOP-DI
                                                                                                                                                                                                                                                                                                                                 Length 1700;
                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          --AIAGQPLAVAD---
```

590

420 413 365

487 479 464

TO PSEUDOMONAS

97;

Gaps

588 165

			,
	•		
5			

```
Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Minimum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Perfect score:
     Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed and is derived by analysis of the total score distribution.
                                                                              1916
1908.5
1783
1576
1576
1569
1569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1444.5
1432.5
                                                                                                                                                                                                                                                                                                                                                                                                                                            Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              seq length: 0 seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                            Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-941-947A-16
2788
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
100.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             January 29, 2004, 15:54:19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       789580 seqs,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 MTKF1F1TGGVVSSLGKGIA.....HALFSGFVEAAAKHKTQGTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US07_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US07_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US08_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US08_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US09_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US09_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US09C_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US09C_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
  GenCore version (c) 1993 - 2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                 B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          207824079 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gapext 0.5
  N D O O O O O O O O D I
                       US-09-815-242-1193

US-09-815-242-11275

US-09-815-242-1175

US-09-815-242-13865

US-09-815-242-12372

US-09-815-242-12378

US-09-815-242-1997

US-09-815-242-10727

US-09-815-242-10727

US-09-815-242-11370

US-09-815-242-11370

US-09-815-242-11370

US-09-815-242-11370

US-09-815-242-11370
                                                                                                                                                                                                                                                                                                                                                                                                                                               벊
                                                                                                                                                                                                                                                                                                                                US-09-934-903-12
US-09-934-868-70
US-09-941-947A-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; Search time 37.1346 Seconds
(without alignments)
3044.503 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5.1.6
Compugen Ltd.
Sequence 12, Appl
Sequence 70, Appl
Sequence 16, Appl
Sequence 11933, A
Sequence 10275, A
Sequence 11175, A
Sequence 11865, A
Sequence 12372, A
Sequence 12978, A
Sequence 10727, A
Sequence 10727, A
Sequence 113376, A
Sequence 11330, A
Sequence 14011, A
Sequence 14011, A
                                                                                                                                                                                                                                                                                                                                                                                                                                            Description
```

A, N	44	ΰ	42	41	40	9	8	37	36	Ü	ω 4.	ü	32	L)	G O	29	28	27	26	25	24	23	22	21	20	ξĐ	8	17	16
111.5	111.5	111.5	112.5	112.5	113	113.5	114	115.5	115.5	115.5	116.5	120	120	120	122	123.5	124	124	125.5	126	126.5	204	245	27		53	513	90	1355.5
4.0	4.0	٠	4.0	4.0	4.1	4.1	4,1		4.1	4.1	4.2				4.4	4.4	4.4	4.4		4.5	4.5	7.3	8 .8	11.7				36.1	
728	728	728	537	371	362	106	1071	1687	650	650	656	382	382	382	845	371	374	374	1390	374	238	135	59	94	195	199	298	1003	537
12	12	12	12	12	12	12	12	<u>,</u>	12	12	12	16	12	12	10	12	12	12	12	12	12	12	12	12	9	15	12	12	12
US-10-369-493-16179	9-493-	9-493-	-10-369-493-89	-10-369-493-	US-10-369-493-17332	US-09-864-408A-2256	US-10-369-493-23117	6	93	-493-	-493.	US-10-210-115-33	US-10-369-493-15474	US-10-369-493-691	26-43	US-10-369-493-29	US-10-369-493-16223	3-1	9-493-	-493-	US-10-314-657-34	-264-049-42	-408A-235	408A-3	US-09-925-297-773	0-106-	-10-264-049-288	-10-161-051-	US-10-289-762-246
e 161	1579	0.4	89	e 1156	73	e 2256	23	3, Appl	Sequence 20401, A	Sequence 1338, Ap	18	33,	4	1	4347,	29, Aj	16223,	44,	11	1013	34,	e 4217	Sequence 2350, Ap	Sequence 3914, Ap	773,		e 2881,	e 91, Ap	Sequence 246, App

ALIGNMENTS

US-09-934-903-12

Sequence 12, Application US/09934903 Patent No. US20020102690A1

GENERAL

INFORMATION:

APPLICANT: Koffas, Mattheos APPLICANT: Odom, J. Martin APPLICANT: Schenzle, Andrea APPLICANT: No. US200201026 APPLICANT: Tomb, Jean-Franc

Odom, J. Martin Schenzle, Andreas J. No. US20020102690Alton, I Tomb, Jean-Francois Rouviere, Pierre

Kelley

APPLICANT:

```
Ş
                                       В
                                                                            δ
                                                                                                                                                                                                         ; OTHER INFORMATION: Amino acid sequences encoded by ORF6 US-09-934-903-12
                                                                                                                                                                                                                                                                                                        NUMBER OF SEQ ID NOS: 24
SOFTWARE: Microsoft Office 97
SEQ ID NO 12
LENGTH: 544
                                                                                                                                              Query Match
Best Local Similarity
                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Picataggio, Stephen
APPLICANT: Cheng, Qiong
TITLE OF INVENTION: Genes Involved in Isoprenoid Compounds Production
FILE REFERENCE: CL1646 US NA
CURRENT APPLICATION NUMBER: US/09/934,903
CURRENT FILING DATE: 2001-08-22
PRIOR APPLICATION NUMBER: 60/229,907
PRIOR FILING DATE: September 1, 2001
                                                                                                                                                                                                                                                 TYPE: PRT ORGANISM: Methylomonas 16a FEATURE:
                                                                                                                          544:
                                                                                 ь
                                                                    MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSFFQHGEVF
  VTEDGAETDLDLGHYERFLKTTWTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD 120
                                         MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                        100.0%; Score 2788; DB 10; ilarity 100.0%; Pred. No. 1.5e-254; Conservative 0; Mismatches 0;
                                                                                                                                                                  DB 10;
                                                                                                                             Indels
                                                                                                                                                                  Length
                                                                                                                                                                      544;
                                                                                                                             0,
                                                                                                                             Gaps
                                                                                   60
                                              60
```

```
GENERAL INFORMATION:

APPLICANT: KOEfas, Mattheos

APPLICANT: Odom, James M

APPLICANT: Schenzle, Andreas J

TITLE OF INVENTION: DENTRIFYING METHANOTROPHIC BACTERIAL STRAIFLE APPLICATION INDMESS: US/09/934,868

CURRENT APPLICATION NUMBER: US/09/934,868

CURRENT FILING DATE: 2001-08-22

PRIOR APPLICATION NUMBER: 60/229,858

PRIOR FILING DATE: 2000-09-01

NUMBER OF SEQ ID NOS: 81

SOFTWARE: Microsoft Office 97

SEQ ID NO 70

LENGTH: 544

TYPE: PRT

CORDANISM: Methylomonas 16a

FEATURE:

OTHER INFORMATION: Amino acid sequences encoded by ORF6 - PYRC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-934-868-70
                           밁
                                                  Ś
                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       뮵
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 70 Patent No.
                                                                                                                                          Best Loc
Matches
                                                                                                                                                                    Query Match
                                                                                                                                                                                                   -09-934-868-70
                                                                                                                                         Local Similarity
les 544; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          70, Application US/09934868
5. US20020137190A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                     6
                                                                                                            -ب
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAMBKVVDGLTHPTDBVSIAIVGKYVDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTIVPYIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EIKRRYYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLANERKGDYLGATVQVIPHITD
                                                                                                 MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QGTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QGTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EAGELVTROEDSDLGGTWRLGAQKCRLKADSLAFQL YQKDVITERHRHRYEFNNQYLKQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SAGELKTKPTOHSVKELRTIGIOPDILICRSEOPIPASERRKIALFTNVAEKAVISAIDA
EIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK 180
                                                                                  MTKF1F1TGGVVSSLGKGIAASSLAAILEDRGLKVT1TKLDPY1NVDPGTMSPFQHGEVF 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVTTERHRHRYEFNNQYLKQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITEMMD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPXSPHPVIGLITEM/D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TDAYKSLNEALIHAGIHTRHXVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGK 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH
                                                     VTEDGAETDLDLGHYERFLKTTWTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD 120
                                                                                                                                       100.0%; Score 2788; DB 10; llarity 100.0%; Pred. No. 1.5e-254; Conservative 0; Mismatches 0;
                                                                                                                                         Indels
                                                                                                                                                                   Length 544;
                                                                                                                                                                                                                 PYRG
                                                                                                                                         0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
             밁
                                 Ş
                                                                   밁
                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 3
US-09-941-947A-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                     US-09-941-947A-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 16, Application US/09941947A Publication No. US20030003528A1 GENERAL INFORMATION:
                                                                                                                                          Query Match
Best Local :
                                                                                                                                                                                                                                           SEQ ID NO 16
                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Brzostowicz, Patricia
APPLICANT: Cheng, Qiong
APPLICANT: DiCosimo, Deana J.
APPLICANT: Koffas, Mattheos
APPLICANT: Miller, Edward S. Jr.
                                                                                                                                                                                                                                                       NUMBER OF SEQ ID NOS: 60
SOFTWARE: Microsoft Office
                                                                                                                                                                                              LENGTH: 544
TYPE: PRT
ORGANISM: Methylomonas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                             544;
                                         61
                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QGTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QGTA 544
                                                                                                                             Conservative
                                                                                                                        100.0%; Sc
100.0%; Pr
                                                                                                                                                                                                   16a
                                                                                                                          Score 2788; DB 11;
Pred. No. 1.5e-254;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
```

```
APPLICANT: Koffas, Mattheos
APPLICANT: Miller, Edward S. Jr.
APPLICANT: Miller, Edward S. Jr.
APPLICANT: Odom, J. Martin
APPLICANT: Picataggio, Steve
APPLICANT: Rouviere, Pierre E.
TITLE OF INVENTION: CAROTENOID PRODUCTION FROM A SINGLE CARBON SOURCE
FILE REPERENCE: CL1903 US NA
CURRENT APPLICATION NUMBER: US/09/941,947A
CURRENT PILING DATE: 2001-09-01
PRIOR APPLICATION NUMBER: 60/229,907
PRIOR APPLICATION NUMBER: 60/229,858
PRIOR PILING DATE: 2000-09-01
PRIOR PILING DATE: 2000-09-01
PRIOR PILING DATE: 2000-09-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVI PHI TD
                                                                  MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EAAGMKFSGKSLDGRIVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SAGELVTRDEDSDLGGTWRLGAQKCRLKADSLAPQLYQKDVITERHRHRYBFNNQYLKQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ISTVRFARENKIPYLGICLGMOSAVIBFARNVVGLEGAHSTEFLFKSPHPVIGLITEMMD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGK 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DTIYRIPLLLREQGLODLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH
                                                                                                                                                                       Indels
                                                                                                                                                                                                                 Length 544;
                                                                                                                                                                    ٥,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     420
                  120
                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      480
                                                                                                                                                                    0
```

```
US-09-815-242-11933; Application Sequence 11933; Application Patent No. US20020061569A1
; TYPE: PRT ; ORGANISM: Pseudomonas US-09-815-242-11933
                                                              CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR PPLICATION NUMBER: 60/206,848
PRIOR PPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR PPLICATION NUMBER: 60/242,578
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR PILLING DATE: 2000-10-23
PRIOR PILLING DATE: 2000-10-23
PRIOR PILLING DATE: 2000-11-27
PRIOR PILLING DATE: 2000-11-27
PRIOR PILLING DATE: 2000-12-22
PRIOR PILLING DATE: 2001-02-16
PRIOR PRIOR SEQ ID NOS: 14110
SOFTWARE: PastSEQ for Windows Version 4.0
SEQ ID NO 11933
LENGTH: 542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith W.
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Carr, Grant J.
APPLICANT: Yamamoto, Robert T
APPLICANT: Xu, H. Howard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Zyskind, Judith W. Wall, Daniel
Trawial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTFRNGHALFSGFVEAAAKKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQL 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITEWMD 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGK 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAMEKVVDGLTHPTDEVSIAIVGKYVDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVABKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EIKRRYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EIKRRYYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ISTVRFARENKIPYLGICEGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEWMD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Application US/09815242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            300
```

```
US-09-815-242-10275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          딹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
             CURRENT APPLICATION NUMBER: US/09/815,24
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR TRILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR FILING DATE: 2000-11-27
PRIOR RETLING DATE: 2000-12-22
PRIOR FILING DATE: 2000-12-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 10275, Application US/09815242 Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches 383;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                       APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity
FILING DATE: APPLICATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EAAGMKFSGKSLDGRLVEIIELPEHPWFLACQEHPEFTSTPRNGHALFSGFVBAAAKH
||:||:||:||||||:||||:||||:|||||:||
EQAGLKISGRSGDGALVEVVEAPEHPWFVACQEHPEFTSTPRDGHPLFSGFVNAALKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EAGELVTRDEDSDLGGTWRLGAOKCRLKADSLAFQLYQKDVTTERHRHRYEFNNQYLKQL 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ISTVQYARENKIPYLGICLGMQVAVIEYARNVLGWSDANSTEFDKSSGHPVVGLITEWQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEMMD 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LDAYKSLIEAWTHAGIQSRIKVNLRYIDSEDIEQQGTSLLEGVDAILVPGGFGLRGVEGK 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TDAYKSLNEALIHAGIHTRHKVQISYIDSETIBAEGTAKLKNVDAILVPGGFGERGVEGK 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DTIYRIPSVLHAQGLDDIVVERFGLECGQADLSEMDRVVDAKLNPEREVTIAMVGKYMEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EIKRRIIKGAGDADVALVEIGGTVGDIESQPFLEAIRQLRVEIGAKRAMLMHLTLVPYIA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EIKRRYYESABGKOVALIEVGGTVGDIESLPFLETIRQKGVELGRDRALFIHLTLVPYIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VTQDGAETDLDLGHYERFVRTTMTQNNNFTTGRVYMDVLRKERRGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VTEDGAETDLDLGHYERFLKTIMTKKKNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDFYINVDFGTMSFFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATGATEIRTEASDLGGTMRLGAQECQLQTGTLVHDCYAKDVIVERHRHRYEVNNVLLPQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TAGETKTKPTQHSVKELRSIGLQPDVLVCRSDHPIDVSSRRKIALFTNVEERAVIALEDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MTRY1FVTGGVVSSLGKG1ASASLAA1LEARGLKITMLKLDPY1NVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Trawick, John D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Wall, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                       Grant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 72.0%;
71.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; Score 2008; DB 9;
; Pred. No. 8.5e-181;
64; Mismatches 91;
                                                                                                                                                                                                                                                                                                                                                                        유
                                                                                                                                                                                                                                                                                                                                                                          Essential Genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 542;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0,
```

NUMBER: 60/269,308

```
APPLICANT: Haselbeck, Robert
APPLICANT: Ohleen, Kari L.
APPLICANT: Ohleen, Kari L.
APPLICANT: Wall, Daniel
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Yu. H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
                                                                                                                                                                                                                                                                                                                                                                  US-09-815-242-11175
; Sequence 11175, Application
; Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ф
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          货
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ďΩ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ફ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQ ID NOS: 1
SOFTWARE: FAST SEQ FOR
SEQ ID NO 10275
LENGTH: 545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM: Escherichia coli
-09-815-242-10275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 <u>د</u>0 ن
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ≟83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   122 IKRRVYBSAEGKDVALIEVGGTVGDIESLPFLETIROMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPRQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SGEVKTKPTQHSVKELLSIGIQPDILICRSDRAVPANBRAKIALFCNVPBKAVISLKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGELVTRDEDSDIGGTMRIGAQKCRIKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SIYKIPGLLKSQGLDDYICKRFSLNCPEANLSEWEQVIFEEANPVSEVTIGMVGKYIELP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TNYIFVTGGVVSSLGKGIAAASLAAILEARGLNVTIMKLDPYINVDPGTMSPIQEGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DAGLRVAGRSGDDQLVEITEVPNHPWFVACQFHPEFTSTPRDGHPLFAGFVKAASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AACMKFSGKSLDGRLVBIIBLPBHPWFLACQFHPBFTSTPRNGHALFSGFVBAAAK 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STVRFARENKIPYLGICLGMQSAVIBFARNVVGLEGAHSTEFLFKSPHPVIGLITEWMDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DAYKSVIEALKHGGLKNRVSVNIKLIDSQDVETRGVEILKGLDAILVPGGFGYRGVEGMI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NGNVEVRSEKSDIGGTMRIGAQQCQLVDDSLVRQLYNAPTIVERHRHRYEVNNMLLKQIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTARFARENNIPYLGICLGMQVALIDYARHVANMENANSTEFVPDCKYPVVALITEWRDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IKERVL8GGEGHDVVLVE1GGTVGD1ESLPFLEAIRQMAVEIGREHTLFMHLTLVPYMAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TEDGAETDLDLGHYERFIRTKMSRRNNFTTGRIYSDVLRKERRGDYLGATVQVIPHITNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TEDGAETDLDLGHYERFLKTIMTKKKNPTTGQVYEQVLRNERKGDYLGATVQVIPHITDE 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 68.7%; Score 1916; DB 9; 67.7%; Pred. No. 4.3e-172;
                                                                                                                                                                                                                                                                                                                                                                                         US/09815242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches 102;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 . 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  482
```

```
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR FILING DATE: 2000-10-23
PRIOR PELICATION NUMBER: 60/253,625
PRIOR PILING DATE: 2000-11-27
PRIOR PELING DATE: 2000-11-27
PRIOR PELING DATE: 2000-12-22
PRIOR PELING DATE: 2000-12-22
PRIOR PELING DATE: 2000-16-26
PRIOR PELING DATE: 2001-02-16
NUMBER: PASTE 2001-02-16
NUMBER: PASTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           용
                                                                                                                          밁
                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                           엉
                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   皮
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             닺
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; TYPE: PRT ; ORGANISM: Haemophilus influenzae US-09-815-242-11175
                                              S
                                                                                                                                                                                                                                                 片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches 364;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               483
                                                              482
                                                                                                                             423
                                                                                                                                                                                         422
                                                                                                                                                                                                                                                    363
                                                                                                                                                                                                                                                                                                                362
                                                                                                                                                                                                                                                                                                                                                                               303
                                                                                                                                                                                                                                                                                                                                                                                                                                          302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2 TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPPQHGEVFV 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KAGLKVTGLSADKKLVEIIEVENHPWFVACQFHPEFTSTPRDGHPLFAGFVKAAYENHK
                             AAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAA-AKHK 539
                                                                                                                       EGNTEVRIDESDIGGIMRIGAQQCHLVSGSRARELYGKETIEERHRYEVNNTILIPQIE
                                                                                                                                                                                  AGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE 481
                                                                                                                                                                                                                                                 RTAQYARENKI PYLGI CLGMQI ALI EYARNVAGLTKANSSEFDKDCEQPVVALI TEWQDA
                                                                                                                                                                                                                                                                                         STVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITEMMDE
                                                                                                                                                                                                                                                                                                                                                                                  DAYKSVNBALKHAGLTNRLSVNIKYIDSQDVBTKGVBVLKGIDGILVPGGFGYRGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                             DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVÄEKÄVISÄIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IXDRVIAGAQĞHDVVIVEVĞĞİVĞDİESLPFLEALRQLAVQVGREHTLFMHLTLVPYIPT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IKRRVYESABGKDVALLEVGGTVGDIESLPFLBTIRQMGVELGRDRALFIHLTLVPYIKS 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TNYIFVIGGVVSSLGKGIAAASLAAILEARGLAVTIMKLDYXIAVDPGTMSPTQHGEVFV 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGEVKTKPTQHSVKELLSIGIQPDVLICRSDRMIPPNERAKIALFCNVAERAVISLKDVN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             68.5%; Score 1908.5; DB 9; 67.5%; Pred. No. 2.2e-171; ive 71; Mismatches 103;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 545;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1,
      541
                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                 482
                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              182
                                                                                                                                                                                                                                                                                                                                                                                  362
```

```
RESULT 7

US-09-815-242-13865
; Sequence 13865, Application US/09815242
; Sequence 13865, Application US/09815242
; Patent No. US20020061569A1
; GENERAL INFORMATION;
APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari L.
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Trawick, John D.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Drokaryotes
; FILE REFERENCE: ELITRA.011A
```

ä

Q Ph

Essential Genes

```
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR FILING DATE: 2000-03-21
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-12-22
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-16
PRIOR FILING DATE: 2001-12-25
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-12-27
PRIOR FILING DATE: 2001-12-27
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATI
RESULT 8
US-09-615-242-12372
; Sequence 12372, Application US/09815242
; Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                        å
                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               벍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCATION: (1)...(511)
OTHER INFORMATION: Xaa = -09-815-242-13865
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CURRENT APPLICATION NUMBER: US/09/815,
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: PRT
ORGANISM: Salmonella typhi
                                                                                                                                                                                                                482
                                                                                                                                                                                                                                                                   423
                                                                                                                                                                                                                                                                                                                      422
                                                                                                                                                                                                                                                                                                                                                                        363
                                                                                                                                                                                                                                                                                                                                                                                                                           362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             341; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                                                                                                                                        STVRFARENKI PYLGICLGMOSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITEWMDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IKRRVYBSABGKDVALIEVGGTVGDIBSLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIFHITDE 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDFYINVDPGTMSFFQHGEVFV
                                                                                                                                                                                                                                                                DGNVEVRSEKSDLGGTMRLGAQQCQLSDDSLVRQLYGASTIVERHRHRYEVNNWLLKQIB
                                                                                                                                                                                                                                                                                                        AGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                                                                                                                        DAYKSVIEALKHGGLKNRVTVNIKLIDSQDVETRGVEILKDLDAILIPGGFGYRGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DAYKSLNEALIHAGIHTRHKVQISYIDSETIBAEGTAKLKNVDAILVPGGFGERGVEGKI 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIYKIPGLLKSQGLDDYICKRFSLNCPBANLSEWEQVIYBBANPAGBVTIGMVGKYIBLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHT 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGEVKTKPTQHSVKELLSIGIQPDILICRSDRAVPANERAKIALFCNVPEKAVISMKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TEDGAETDLDLGHYERFIRTKMSRRNNFTTGRIYSDVLKKERRGDYLGATVQVIPHITNA 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TNYIFVTGGVVSSLGKGIAAASLAAILEARGLNVTIMXLDPYINVDPGTMSPIQHGEVFV
                                                                                                                                                                                                                AAGMKFSGKSLDGRLVEIIBLPEHPW 507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             64.0%; Score 1783; DB 9;
67.4%; Pred. No. 1.5e-159;
ative 64; Mismatches 101;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Any Amino
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 511;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             182
                                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                              422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                              В
                                                                                                        δ
                                                                                                                                                                   片
                                                                                                                                                                                                           á
                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                        Ď,
                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      먉
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; TYPE: PRT ; ORGANISM: Staphylococcus aureus US-09-815-242-12372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR PILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR PILING DATE: 2000-05-26
PRIOR PILING DATE: 2000-05-26
PRIOR PILING DATE: 2000-10-23
PRIOR PILING DATE: 2000-10-23
PRIOR PILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR FILING DATE: 2000-12-22
PRIOR FILING DATE: 2000-12-22
PRIOR FILING DATE: 2000-12-22
PRIOR FILING DATE: 2000-12-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FASTSEQ FOR WINDOWS Version
SEQ ID NO 12372
LENGTH: 536
TYPE: PRT
OPCANTON:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S
Matches 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
APPLICANT: Haselbeck,
APPLICANT: Ohlsen, Ki
APPLICANT: Zyskind,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITEA.011A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                              421
                                                                                                             417
                                                                                                                                                                      361
                                                                                                                                                                                                                      357
                                                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                              298
                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                    239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     al Similarity
302; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                SEGKISAIKYARENNVPFFGICLGXQLATVEFSRNVLGLEGAHSAELDPATPYPIIDLLP 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EIKRRYYESAE--GKDVALIEVGGTVGDIESLPFLETIROMGVELGRDRALFIHLTLVPY 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VTEDGAETDLDLGHYERFLKTIMTKKNNFTTGQVYEQVLRNBRKGDYLGATVQVIPHITD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MIKFIFVTGGVVSSLGKGITASSLGRLLKDRGLNVTIQKFDPYLNVDPGTMSPYQHGEVF
                                                                                                                                                                                                  VEGKISTVRFARENKIPYLGICLCMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLIT 416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MTKF1F1TGGVVSSLGKG1AASSLAA1LEDRGLKVT1TKLDPYINVDPGTMSPFQHGEVF
        LXQLBAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAA 536
                                                                                                                                                                                                                                                                         VSIQDAYLSVVESLKHAGYPFAKDIDIRWIDSSEVTDENAAEYLADVDGILVPGGFGFRA 360
                                                                                                                                                                                                                                                                                                                        VDHTDAYKSLMBALIHAGIHTRHKVQISYIDSETIEAEGTAK-LKMVDAILVPGGFGERG 356
                                                                                                                                                                                                                                                                                                                                                                                    DADSLYBIFLQLSQQNMDDIVIKRLQLNAKYETQLDEWKQLLDIVNNLDGKITIGLVGKY 300
                                                                                                                                                                                                                                                                                                                                                                                                             DADTIYRIPILLIREQGIDDIVVDQIRIDVP-AADISAMBKVVDGITHPTDEVSIAIVGKY 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EWMDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYBFNNQY 476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IKAAGEMKTKPTQHSVKELRGLGIQPDLIVVRTEYEMTQDLKDKIALFCDINKESVIECR 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Wall, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ohlsen, Kari L.
Zyskind, Judith W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Carr, Grant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Trawick, John D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            56.5%;
ilarity 55.6%;
Conservative 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Robert
                                                              - IBDLGGTLRLGLYPCSIKEGTLAQDVYGKAEIEERHRHRYBENNDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; Score 1576; DB 9;
; Pred. No. 6e-140;
93; Mismatches 134;
```

Length 536; Indels 14;

180

120

```
RESULT 9
US-09-815-242-12978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    띯
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9
S
                                맑
                                                              S
                                                                                              В
                                                                                                                        Ś
                                                                                                                                                              뭐
                                                                                                                                                                                          Ş
                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                         문
                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILLING DATE: 2000-05-23
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR TILLING DATE: 2000-05-26
PRIOR FILLING DATE: 2000-10-23
PRIOR PILLING DATE: 2000-11-23
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR FILLING DATE: 2000-11-27
PRIOR FILLING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/257,931
                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQ ID NOS: 14110
SOFTMARE: FASTSEQ for Windows Version
SEQ ID NO 12978
LENCTH: 536
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 12978, Application US/09815242
Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                          ORGANISM: Staphylococcus aureus -09-815-242-12978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE OF INVENTION: Identification of Essential Genes
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR APPLICATION NUMBER: 60/269,308 PRIOR FILING DATE: 2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILING DATE: 2000-12-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  471
                                                                                                181
                                                                                                                               179
                                                                                                                                                              121
                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                            302;
                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                         h 56.5%; Score 1576; DB 9; Length 5. Similarity 55.6%; Pred. No. 6e-140; O2; Conservative 93; Mismatches 134; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REQLEANGMVISGTSPDGRIVEMVBIPTNDFFIACQFHPEFLSRENRPHPIFKSFIEASL 530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KYQ 533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KHK 539
                                                              DADITYRIPILIREQGIDDLVVDQLRIDVE-AADLSAWEKVVDGLTHPTDEVSIAIVGKY
                                                                                                                            IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI 238
                                                                                                                                                              EIKERLLLAGESTNADVVITEIGGTTGDIESLPFIEAIRQIRSDLGRENVMYVHCTLLPY
                                                                                                                                                                              EIKRRYYESAE--GKDVALIEVGGTVGDIESLPFLETIROMGVELGRDRALFIHLTLVPY
                                                                                                                                                                                                                      VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                        MIKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVIITKLDPYINVDPGTMSPFQHGEVF
VDHTDAYKSLNEAL IHAGIHTRHKVQISYIDSETIEAEGTAK-LKWVDAILVPGGFGERG
                                DADSLYEIPLQLSQQNMDDIVIKRLQLNAKYETQLDEWKQLLDIVNNLDGKITIGLVGKY
                                                                                              ikaagemktkétőhsvkeirgigiópdiivvrtéxemtodikdkialécdinkesviecr
                                                                                                                                                                                                                                                                                         MTKF1FVTGGVVSSLGKG1TASSLGRLLKDRGLNVT1QKFDFYLNVDFGTKSFYQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Yamamoto, Robert T.
Xu, H. Howard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Trawick, John D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Carr, Grant J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Daniel
                                                                                                                                                                                                                                                                                                                                                                                        Length 536;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ħ
                                                                                                                                                                                                                                                                                                                                                            14.
                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                 178
                                                                                                                                                                                                                                                             120
     356
                                    300
                                                                   297
                                                                                                  240
                                                                                                                                                                  180
                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                            4:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 10
US-09-815-242-4984
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ś
                                  밁
                                                                                                  밁
   S
                                                                 S
                                                                                                                            Ś
                                                                                                                                                                                                                                  US-09-815-242-4984
                                                                                                                                                             Query Match
Best Local Similarity
Matches 301; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       531 KYQ 533
      121
                                     61
                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KHK 539
```

```
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version
SEQ ID NO 4984
LENGTH: 536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Carr, Grant J.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITER. 011A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR FILING DATE: 2000-12-22
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                TYPE: PRT ORGANISM: Enterococcus faecalis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILING DATE: 2000-05-26
APPLICATION NUMBER: 60/242,578
FILING DATE: 2000-10-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: 60/206,848 FILING DATE: 2000-05-23 APPLICATION NUMBER: 60/207,727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: 60/257,931
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: 60/253,625
FILING DATE: 2000-11-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301 VSLQDAYLSVVESLKHAGYPFAKDIDIRWIDSSEVTDENAAEYLADVDGILVPGGFGFRA 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                357 VEGKISTVRPARENKIPYLGICLGMQSAVIEPARNVVGLEGAHSTEPLPKSPHPVIGLIT 416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4984, Application US/09815242
). US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEGKISAIKYARENNVPPFGICLGMQLATVEFSRNVLGLEGAHSAELDPATPYPIIDLLP 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LKOLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACOFHPEFTSTPRNGHALFSGFVEAAA 536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REQLEANGHVISGTSPDGRIVENVEIPTNDFFIACQFHPEFLSRPNRPHPIFKSFIEASL 530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EMWDEAGELVTRDEDSDLGGTWRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQY 476
EIKRRVYESAE--GKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPY 178
                                                                                    VTEDGAETDLDLGHYERFIKTIMIKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD 120
                                                                                                                                                             MTKYIFVTGGVVSSIGKGIVAASLGRLLKNRGLKVTIQKFDFYINVDPGTMSFYQHGEVF
                                                                                                                                                                                                 MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Haselbeck, Robert
                                                     VTDDGAETDLDLGHYERFIDINLNKYSNVTTGKIYSEVLRKERKGEYLGATVQVIPHITN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Wall, Daniel
Trawick, John D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ohlsen, Kari L.
Zyskind, Judith W.
                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ---IEDLGGTLRLGLYPCSIKEGTLAQDVYGKABIEERHRHRYEFNNDY
                                                                                                                                                                                                                                                            56.3%; Score 1569; DB 9; 55.4%; Pred. No. 2.8e-139; tive 94; Mismatches 134;
                                                                                                                                                                                                                                                                                                                    Length 536;
                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ä
                                                                                                                                                                                                                                                                    14;
                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  470
                                                                                                                                                             60
                                                                                                                                                                                                                  60
                                                        120
                                                                                                                                                                                                                                                                       4.
```

```
δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-815-242-10727; Sequence 10727, Application US/09815242; Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            뫉
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           문
                                                                           PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version
SEQ ID NO 10727
LENGTH: 536
Query Match
                                ORGANISM: Enterococcus
-09-815-242-10727
                                                                                                                                                                                                                                                                                                                                                                     FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: US/09/815,
CURRENT FILING DATE: 2001-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of
TITLE OF INVENTION: Prokaryotes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                         PRIOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PPLICANT: Haselbeck,
                                                                                                                                                                                                                                                                                                       FILING DATE: 2000-03-21
APPLICATION NUMBER: 60/206,848
FILING DATE: 2000-05-23
                                                                                                                                                                                             APPLICATION NUMBER: 60/207,727
FILING DATE: 2000-05-26
                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: 60/191,078
                                                                                                                                                                            APPLICATION NUMBER: 60/257,931 FILING DATE: 2000-12-22
                                                                                                                                                                                                                                                       APPLICATION NUMBER: 60/242,578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KHK 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EGKIEAIRFARENDVEFIGICLGMQMACVEFGRNVVGLEDAGSAETNPDVTNNIIDLMAD 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLÞKSDHÞVIGLITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BLPDAYISVVEALKHAGFDFDSDIEIDWYDSQELTAENVAERIGSADGILVPGGFGDRGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIBABGTA-KLKNVDAILVPGGFGERGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DVETLYSIPLALQAQNMDQIVCDHLKLDAPAADMTEWRALEEKVLNLKKKTKIALVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DADTIYRIPELLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LKQLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRWGHALFSGFVEAAA 536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WMDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAPQLY-QKDVITERHRHRYEFNNQY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ohlsen, Kari L.
Zyskind, Judith W.
Wall, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Trawick, John D. Carr, Grant J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Yamamoto, Robert T.
                                                                                                                ID NOS: 14110
SEQ for Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QENI ENLĠĠŤĿŔĹĠĿYPĊĸĿĸĸĠŦĸŦĄŊĄŶĠŊĔĎŸVQĔŔĤŔĤŔŶĔŦŊŊĸŶ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Robert
     Score 1569;
                                                                                                                                                                                                                                                                                                                                                                                                                                         Essential Genes in
                                                                                                                                                                                                                                                                                                                                                                                           , 242
     B
     9
   Length 536;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      530
```

```
S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: Prokaryotes FILE REFERENCE: ELITRA.011A CURRENT APPLICATION NUMBER: US/09/815,242 CURRENT APPLICATION NUMBER: 001-03-21 PRIOR APPLICATION NUMBER: 60/191,078 PRIOR APPLICATION NUMBER: 60/206,848 PRIOR FILLING DATE: 2000-03-21 PRIOR APPLICATION NUMBER: 60/206,848 PRIOR PRILING DATE: 2000-05-23 PRIOR APPLICATION NUMBER: 60/207,727 PRIOR APPLICATION NUMBER: 60/207,727 PRIOR APPLICATION NUMBER: 60/203,725 PRIOR APPLICATION NUMBER: 60/23,578 PRIOR APPLICATION NUMBER: 60/253,625 PRIOR APPLICATION NUMBER: 60/253,625 PRIOR APPLICATION NUMBER: 60/253,625 PRIOR APPLICATION NUMBER: 60/253,625 PRIOR APPLICATION NUMBER: 60/253,625 PRIOR APPLICATION NUMBER: 60/253,625 PRIOR APPLICATION NUMBER: 60/253,625 PRIOR APPLICATION NUMBER: 60/253,625 PRIOR APPLICATION NUMBER: 60/253,625 PRIOR APPLICATION NUMBER: 60/257,931
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       끍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-815-242-13376
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   믕
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 13376, Application Patent No. US20020061569A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity
                                                                                                                                                                                                                                                                                                                               APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                           APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Haselbeck, Robert APPLICANT: Ohlsen, Kari L. APPLICANT: Zyskind, Judith
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 MTKF1F1TGGVVSSLGKG1AASSLAA1LEDRGLKVT1TKLDPY1NVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LKQLEAAGMKPSGKSLDGRLVBIJELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAA 536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WMDEAGELVTRDEDSDIGGTMRIGAQKCRLKADSLAFQLY-QKDVITERERHRYEFNNQY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ELPDAYISVVEALKHAGFDFDSDIEIDWVDSQELTAENVAERIGSADGILVPGGFGDRGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTA-KLKNVDAILVPGGFGERGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DVETLYSIPLALQAQNMDQIVCDHLKLDAPAADMTEWRALEEKVLNLKKKTKIALVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DADTIYRIPLLLREQGLODLVVDQLRLDVPAADLSAWBKVVDGLTHPTDEVSIAIVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BIXEKIMRAAKMTDADVIITEVGGTVGDIBSLPFLEALROMKADMGSDNVMYIHTTLIPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BIKRRVYBSAB--GKDVALIEVGGTVGDISSLPFLBTIRQMGVELGRDRALFIHLTLVPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VTDDGAETDLDLGHYERFIDINLNKYSNVTTGKIYSEVLRKERKGEYLGATVQVIPHITN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VTEDGAETDLDLGHYERFLKTTMTKKKINFTTGQVYEQVLRNERKGDYLGATVQVI PHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RQLFEENGLVFSGVSPDNRLVEIVEIPEKQFFVACQFHPELISRPNRPQRLIKGFVGAAL 530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EGKISTVRFARENKIPYLGICLGMOSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ANK 533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EGKI BAIR PAREND V P FLGI CLGMQMACVEF GRNV V GLEDAGS A ETN P D V TNN I I D LMAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KHK 539
                                                                                                                                                                                                                                                                                                                                                                                      Ohlsen, Kari L.
Zyskind, Judith W.
                                                                                                                                                                                                                                                                                           Yamamoto, Robert
Xu, H. Howard
                                                                                                                                                                                                                                                                                                                                 Carr, Grant J
                                                                                                                                                                                                                                                                                                                                                   Trawick, John D.
                                                                                                                                                                                                                                                                                                                                                                     Wall, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Application US/09815242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QENIENLGGTLRLGLYPCKLKKGTKTAAAYGNEDVVQERHRHRYEFNNKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          55.4%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   94;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2.8e-139;
ches 134;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               360
```

NUMBER: 60/257,931

```
Sequence 11320, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith W.
APPLICANT: Zyskind, Judith W.
APPLICANT: Mail, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Carr, Grant J.
APPLICANT: Carr, Grant J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5
                                                                                                                                                                                                                                                        RESULT 13
US-09-815-242-11320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                B
                                                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR FILING DATE: 2000-12-22
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-02-16
PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FASLSEQ for Windows Version
SEQ ID NO 13376
LENGTH: 535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT
ORGANISM: Streptococcus
-09-815-242-13376
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Esse
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: US/09/815,242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            hocal Sin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     122
                                                                                                                                                                                                                                                                                                                                                                                                  473
                                                                                                                                                                                                                                                                                                                                                                                                                                    478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   423
                                                                                                                                                                                                                                                                                                                                533
                                                                                                                                                                                                                                                                                                                                                               538 H 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                N 533
                                                                                                                                                                                                                                                                                                                                                                                                IKRRVYESA--EGKDVALIEVGGTVGDIESLPFLETIROMGVELGRDRALFIHLTLVPYI 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TKF1F1TGGVVSSLGKGIAASSLAAILEDRGLKVT1TKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GKIQAIRYARENDVPMLGVCLGMQLTCIEFARHVLGLEGANSABLAPETKYPIIDIMRDQ 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GKISTVRFARENKIPYLGICLGMOSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEW 418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAK-LKNVDAILVPGGFGERGVB 358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VEHLYQIPLNIQAQGMDQIVCDHLKLDAPAADMTEWSAMVDKVMNLKKQVKISLVGKYVB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFINVAEKAVISAID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TKY1FVTGGVVSSIGKGIVAASLGRLLKNRGLKVTIQKFDPYINIDPGTWSPYQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAPQLY-QKDVITERHRHRYEFNNQYL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LQDAYISVVEALKHSGYVNDVEVKINWVNANDVTAENVABLLSDADGIIVPGGFGQRGTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVD 299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KAAGEMKTKPTOHSVKELRGLGIQPNMLVIRTEEPAGQGIKNKLAQPCDVAPEAVIESLD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LKEKIKRAALTTDSDVIITEVGGIVGDIESLPFLEALROMKADVGADNVMYIHTTLLPYL 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TDDGAETDLOLGHYERFIDINLNKYSNVTTGKIYSEVLRKERRGEYLGATVQVIPHITDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITDE 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        54.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       - IEDMGGTLRIGLYPSKLKRGSKAAAAYHNQEVVQRRHRHRYEFNNAPR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            108;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 1561; DB 9;
Pred. No. 1.6e-138;
B; Mismatches 125;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4.0
                                                        Essential
                                                        Genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 535;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                        Ξ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             14:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       472
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4
```

```
믕
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; TYPE: PRT; ORGANISM: Helicobacter pylori
US-09-815-242-11320
                                Ş
                                                                        밁
                                                                                                    5
                                                                                                                                                문
                                                                                                                                                                            S
                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                  문
                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILLING DATS: 2000-03-21
PRIOR PELLING DATS: 2000-03-21
PRIOR PELLING DATS: 2000-05-3
PRIOR PELLING DATS: 2000-05-3
PRIOR PELLING DATS: 2000-05-26
PRIOR PELLING DATS: 2000-05-26
PRIOR PELLING DATS: 2000-05-26
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR PILLING DATS: 2000-10-23
PRIOR PELLING DATS: 2000-10-23
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
PRIOR PELLING DATS: 2000-11-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOFTWARE: FastSEQ for Windows Version
SEQ ID NO 11320
LENGTH: 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: 60/269,308 PRIOR FILING DATE: 2001-02-16
                                                                                                                                                                                                                          305
                                                                                                                                                                                                                                                                                                                                                                                185
                                                                                                                                                                                                                                                                                                                                                                                                                                                      125
                                                                                                                                                                                        363
                                                                                                                                                                                                                                                                                                  245
                                                                                                                                                                                                                                                                                                                                          243
                                                                                                                                                                                                                                                                                                                                                                                                                  183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  271;
                                                                          423
  483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                  AYKSINEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGKIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SDGAETDLDIGHYERFLIRNLTRLANFTIGQIFSSVIENERKGEYLGKTIQIVPHVIDEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EDGAETDI.DI.GHYERFLKTIMIKKNNETTGQVYEQVIRNERKGDYIGATVQVIPHITDEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KPIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFVT
                            ACMKPSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAA 535
                                                                                                                                                TVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEMMDEA 422
                                                                                                                                                                                                                                                                                                                                    IYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHTD
                                                                                                                                                                                                                                                                                                                                                                                                GELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDADT
                                                                                                                                                                                                                                                                                                                                                                                                                                                    KRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKSA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KPIPVTGGVLSSLGKGISSSSIATLLQHCNYQVSILKIDPYINIDPGTMSPLEHGEVFVT
                                                                        HQKQVRTYNSPLGGTMRLGEYECEIMPNSLLEKAYKKPSIKERHRHRYEINPKYRQEWEN
                                                                                                                                                                                                                          SYKSLIEALIHAGAHLDTQVNIEWLDSENFNEK--TDLEGVDAILVPGGFGERGIEGKIC
                                                                                                                                                                                                                                                                                                                                                                              NELKTKPTQHSVQELRRLGVTPQIILARSPKPLDKELKNKIALSCDVEQDSVIVATDTKS
                                                                                                          GELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLEA
                                                                                                                                                                                                                                                                                                  KGLKVVGFG-SNHLIBAIELEDHPFFVGVQFHPBFTSRLQSPNPIILDFIKSA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            14110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2001-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    51.8%; Score 1444.5; DB 9; 50.8%; Pred. No. 1.7e-127;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  112;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    147;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ω
      534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                      362
                                                                                                                                                                                                                                                                                                                                                                                                                        242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122
                                                                                                                                                                                                                                                                                                                                                                                                                                                            184
                                                                                                                    482
                                                                                                                                                          422
                                                                                                                                                                                                                                362
                                                                                                                                                                                                                                                                                                                                              302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                          304
                                                                                                                                                                                                                                                                                                                                                                                    244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ν
```

RESULT 14
US-10-156-761-14031
US-10-166-761
Sequence 14031, Application US/10156761
Publication No. US20030119018A1
GENERAL INFORMATION:

APPLICANT: APPLICANT: APPLICANT: APPLICANT:

: OMURA, SATOSHI : IKEDA, HARUO : ISHIKAWA, JUN : HORIKAWA, HIROSHI

```
PRIOR APPLICATION NUMBER: JP 2001-204089;
PRIOR FILING DATE: 2001-05-29
PRIOR FILING DATE: 2001-05-30
PRIOR FILING DATE: 2001-08-02
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 14031
LENGTH: 549
Type: nem
                                                                                                                                            RESULT 15
US-09-738-626-5066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                           よ
                                                                                                                                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                                                                                                         뮹
                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; TYPE: PRT ; ORGANISM: Streptomyces avermitilis US-10-156-761-14031
                                                                                                                                                                                                                                                                                                                                                                                                                                        Ď,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                        Sequence 5066, Application US/09738626
Publication No. US20020197605A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
APPLICANT: NAKAGAWA, SATOSHI
APPLICANT: MIZOGUCHI, HIROSI
APPLICANT: ANDO, SEIKO
APPLICANT: HAYASHI, MIKIRO
APPLICANT: OCHIAI, KEIKO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: SAXAKI, YOSHIYUKI
APPLICANT: HATTORI, MASAHIRA
TITLE OF INVENTION: NOVEL POLYMUCLEOTIDES
FILE REFERENCE: 249-262
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local
                                                                                                                                                                                                                      541
                                                                                                                                                                                                                                                      534
                                                                                                                                                                                                                                                                                           481
                                                                                                                                                                                                                                                                                                                                477
                                                                                                                                                                                                                                                                                                                                                                  428
                                                                                                                                                                                                                                                                                                                                                                                                     419
                                                                                                                                                                                                                                                                                                                                                                                                                                        368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       tch 51.4%; Score 1432.5; DB 15; Lengt al Similarity 52.5%; Pred. No. 2.3e-126; 287; Conservative 92; Mismatches 153; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  æ
                                                                                                                                                                                                                                                        AAAKHKT 540
                                                                                                                                                                                                                                                                                                                                                                                        MD-EAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQ-KDVITERHRHYEFNNQY 476
                                                                                                                                                                                                                                                                                                                                                                                                                                                               GKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEW 418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TDAYKSLNEALIHAGIHTRHKVQISYIDSETIE--ABGTAKLKNVDAILVPGGFGERGVE 358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DTIYRIPLLEREQGLDDLYVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALPTNVAEKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IXERIRAMATDEVDVVITEVGGTVGDIESLPFLETVRQVRHEVGRDNVFVVHISLLPYIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IKRRVYESA5GK-DVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TINDGAETDLDIGHYERFLDRDLDGSANVTTGQVYSTVIAKERRGEYLGDTVQVIPHITNE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITDE 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                      AAVERKT
                                                                                                                                                                                                                                                                                           RAELEKKAGLOFSGTSPDGKLVEYVEYPREVHPYLVATOAHPELRSRPTRPHPLFAGLVK 540
                                                                                                                                                                                                                                                                                                                          LKQLE-AACYKFSGKSLDGRLVEIIELPE--HPWFLACQFHPEFTSTPRNCHALFSGFVE 533
                                                                                                                                                                                                                                                                                                                                                                  LDIVAGE-----GDMGGTMRLGMYPAKLAEGSIVREVYDGKEYVEERHRHRYEVNNAY
                                                                                                                                                                                                                                                                                                                                                                                                                                      GKVGAIQYAREHRIPLIGICLGLÓCIVIEAARNILADIPDANSTEFDSATGHFVISTMAEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PDAYLSVTEALRAGGFANRARVKIKWVTSDDCXTPAGAAGQLGDVDAICIPGGFGDRGVS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RSIYDIPKTVHGEGLDAYVVRKLDLPFRDVDWTTWDDLLDRVHKPDHEINLALVGKYIDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PSGELKTKPTQHSVAALRNIGIQPDAIVLRCDREVPTAIKRKISLMCDVDEAAVVACPDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TKHIFVTGGVASSLGKGLTASSLCMLLKARGLRVVMQKLDPYLNVDPGTMNPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SHIBA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TADAYOSHI
                                                                                                                                                                                                                      547
                                                    HIROSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 15; Length 549;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                  480
                                                                                                                                                                                                                                                                                                                                                                                                                                        427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    307
```

```
S
                                                             밁
                                                                                      S
                                                                                                                          밁
                                                                                                                                                                                                                   Ś
                                                                                                                                                      Ś
                                                                                                                                                                                        B
                                                                                                                                                                                                                                                     B
                                                                                                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                                                                                                  뮍
                                                                                                                                                                                                                                                                                                                                             5
                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밇
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; SOFTWARE: PatentIn ver. 3.0
; SEQ ID NO 5066
; LENGTH: 554
; TYPE: PRT
; ORGANISM: Corynebacterium glutamicum
US-09-738-626-5066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: YOKOI, HARUHIKO
APPLICANT: STATELSHI, NAOKO
APPLICANT: STATELSHI, NAOKO
APPLICANT: LIEDA, MASATO
APPLICANT: IKEDA, MASATO
APPLICANT: IKEDA, MASATO
APPLICANT: OZAKI, KAZIO
TITLE OF INVENTION: NOVEL: POLYNUCLEOTIDES
FILE REFERENCE: 249-125
CURRENT APPLICATION NUMBER: US/09/738,626
CURRENT FILING DATE: 2000-12-18
PRIOR APPLICATION NUMBER: JP 99/377484
PRIOR FILING DATE: 1999-12-16
PRIOR APPLICATION NUMBER: JP 00/159162
PRIOR FILING DATE: 2000-04-07
PRIOR FILING DATE: 2000-08-03
NUMBER OF SEQ ID NOS: 7059
ROSTRUMED: DATE: 2000-08-03
NUMBER OF SEQ ID NOS: 7059
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local S
Matches 283
                              531
                                                             483
                                                                                                                                                                                          370
543
                                                                                             474
                                                                                                                           429
                                                                                                                                                                                                                       354
                                                                                                                                                                                                                                                     310
                                                                                                                                                                                                                                                                                     296
                                                                                                                                                                                                                                                                                                                    250
                                                                                                                                                                                                                                                                                                                                                  236
                                                                                                                                                                                                                                                                                                                                                                                    190
                                                                                                                                                                                                                                                                                                                                                                                                                   176
                                                                                                                                                                                                                                                                                                                                                                                                                                                   130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              283;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                          FVEAA 535
                                                                                                                             TMEE---
                                                                                                                                                                                                           ERGVEGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFXSPHFVIG 413
                                                                                                                                                                                                                                                     KYIDLPDAYLSVVEAVRAAGYANWTRTNIKWITSDDCETPSGAMKALSGLDAIVVPGGFG
                                                                                                                                                                                                                                                                                                                  SCPDSSSIYNIPDVLYREHLDTFIIRRLGLPFRDVDWSTWHDLLERVNNPRHELTVGIVG
                                                                                                                                                                                                                                                                                                                                                                              VPYLATSGELKTKPTQHSVABLRGIGILPDALVLRCDREVPQGLKDKIAMACDVDYEGVV
                                                                                                                                                                                                                                                                                                                                                                                                              VPYIKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVI 235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TKHIFVTGGVVSSLGKGLTAASLGQLLIARGLSVTMQKLDPYLNVDPGTMNPFEHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
LVKTA 547
                                                             NAYRAQIAEGSDLVFSGTSPDGHLVEFVEYPKEVHPYLVATQAHPEYKSRPTHAHPLFYG
                                                                                   NQYLKQL-EAAGMKFSGKSLDGRLVEIIELPE--HPWFLACQFHPEFTSTPRNGHALFSG
                                                                                                                                                                                        SAIDADTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IKRRYYESAB-----GKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTL 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TEDGAETDLDLGHYERFLKTTMTKKKNFTTGQVYEQVLRNERKGDYLGATVQVIPHITDE 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TEDGAETDLDLGHYERFLDRNLGLMANVTTGKVYSTVIAKERRGEYLGKTVQVIPHITDE 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                 IKARILSMGEPDAHGNAPDVVISBVGGTVGDIESOPFLRAAROVRHEIGRENCFFIHCSL 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                           - QKAAVSGEADLGGTMRLGAYPATLEEGSLVAELYGTTEVSERHRHRYEVN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         49.2%; Score 1372;
51.9%; Pred. No. 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              166;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            18;
                                                                                                                                                           473
                                                                                                                                                                                            .
428
                                                                                                                                                                                                                                                                                     353
                                                                                                                                                                                                                                                                                                                                                    295
                                                                                                                                                                                                                                                                                                                                                                                    249
                                                                                             530
                                                                                                                             482
                                                                                                                                                                                                                                                                                                                    309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               69
                                                                542
                                                                                                                                                                                                                                                       969
```

Search completed: January 29, Job time: 38.1346 secs

2004,

16:21:18

Run on:

```
Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
    1909
1908.5
1892.5
1892.5
1893.7
1645.5
1639.5
1615.5
1600.5
1600.5
1699.5
1596.5
1563.5
1563.5
1563.5
1563.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PIR_76:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BLCSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     January 29, 2004, 15:44:49; Search time 16.0063 Seconds (without alignments) 3288.453 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 MTKFIFITGGVVSSLGKGIA......HALFSGFVEAAAKHKTQGTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-941-947A-16
2788
        $\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\text{SUBSET}$\
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                283308 segs, 96168682 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GenCore version 5.1,6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length
                 DB
                                                F81790
F81970
B84978
B44978
H784123
F79555
G977255
G977255
A01394
A01394
A01394
A01394
A01394
A01394
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
A01395
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SUMMARIES
CTP synthase PA363
CTP synthase VC244
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (Impo
CTP synthase (Impo
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase (EC 6
CTP synthase 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Description
```

Result No.

Database

44	43	42	4	0	9	86	37	96	35	36	ũ	32	ω	30
1355.5	1356.5	1362	1365.5	1369.5	1374.5	1423	1434	1441.5	1444.5	1449	1484	1507	1538.5	1542
48.6	48.7	48.9	49.0	49.1	49.3	51.0	51.4	51.7	51.8	52.0	53.2	54.1	55.2	55.3
537	537	553	586	577	532	544	535	549	538	538	533	543	557	544
N	N	Ŋ	Ŋ	Ŋ	N	Ŋ	Ŋ	Ŋ	Ŋ	N	'n	N	Ŋ	2
D86520	A72103	B84334	B70503	C71342	D69281	B75379	C86686	T36879	E64563	C71946	E69154	F81418	H71189	\$25101
CTP synthetase (im	ctp synthetase - C	CTP synthase [impo	probable pyrG prot	probable CTP synth	CTP synthase (pyrG	CTP synthase - Dei	CTP synthetase [im	-	CTP synthetase - H	ctp synthase - Hel	CTP synthase - Met	CTP synthase (EC 6	bable CTP s	CTP synthase (EC 6

ALIGNMENTS

S	Db	δ	D	Ś	ы	S S	ш	ð	–	0	ы	0		מ מים	יבו יבו י	מ של של	מליכלים	· z ·	מ לולב עם	000	201	11 211
-2	Ġ,	न्द	ġ	47	È	<i>ن</i> خ	문	Ϋ́	문	á	문	Ş.	Query M Best Lo Matches	A; Experimen C; Genetics: A; Gene: pyr C; Superfami	Resi	A;Status: A;Molecule	Refe	; Lor lature	R;Stover, adman, S.	Date	CIP SY	RESULT
سِ	301	301	241	241	181	181	121	121					Query Match Best Local : Matches 38:	C;Genetics: C;Genetics: C;Genetics: A;Gene: pyrG; PA3637 C;Superfamily: CTP syn	A;Residues: 1-542 <sto> A;Cross-references: GB:</sto>	A;Status: preliminary A;Molecule type: DNA	A;IILIE: COMPIECE 9	Nature 406, 959-964, 200	R;Stover, C.K.; Pham adman, S.; Yuan, Y.;	C;Date: 15-Sep-2000 C:Accession: B83192	CTP synthase PA3637 [imported] - C.Species: Desidomonas aeriginosa	1-
161 IST									61 VIC	11 11 11 11	1 MIR	H A	ch l Simi 383;	y: CI	1-542	preliminar preliminar	เรชน อดุพทน อาลาด้า	5-656 5-656	C.K.; Pham, Yuan, Y.;	ер-20 В831	PA36	
VRFAI	YKSL	YKSLI	YRIP	YRIPI	BTKT	BLKT	CRRI II	-RRVY	TODGAE	DGAR!	SAILA:	GIFI	Y Match Local Similarity nes 383; Conser	PA3637 CTP syn	98: GI	DNA	A : Tell)64,	ham, Y.; [37 [:	
	EAMTH	EALIF	MHAT	LEREC	SHOLD	CHOLL	GAGDA	SAEG	ZIGITG:	- ו - ו - ו	GGVVS	GGVVS	Va		3: AE00		A82950;	2000	Brody,	equer	mport	
Areic	AGIQS	AGIHI	XGLDD1	Arddi 1111	VKELR	VICELA	DVALV	OVALI	HYERE	HYERE	SLGKG	STGKG	20	thase	14783;		MOID		Erwin,	re_re	ed] -	
IGMQS	RTKVN	RHKVQ	WERF	- NOGL	SIGLQ	TIGIO	EIGGT	EVGGT	ERFURTIM	. KTTM	IASAS	IAASS	44	Ę	GB: A		MUID:20437337;	i h	д, А. ; Cou	visio	Pseu	
AVIEF/	LRYIDS	STIVE	3LBCG(RLDVP	PLITAGE	PDILIC	VGDIE:	WGDIE	IQNINI	TKCKNN	EAAIL!	GAAIL!	ore 2008; ed. No. 3.1 Mismatches		B00409		7337;		L.; M:	n 15-8	domona	
RNVVG	BDIEQ	SETIEA	ADLSE	ADESA	RSDHP	RSEQP	QPFLE	1 31 1	TTGRV	TTGQV	ARGLE	DRGLK	Score 2008; DB 2; Pred. No. 3.1e-121; Mismatches 91;)1; NI		A;Ittle: Complete genome sequence of Feddomonas A;Reference number: A82950; MUID:20437337; PMID: B-Accesson. B83102		S.N.;	#sequence_revision 15-Sep-2000	ıs aer	
ISTVRFARENKIPYLGICLGMQSAVIBFARNVVGLEGAHSTEFLPKSPHPVIGLITEM/D	LDAYKSLIEAMTHAGIQSRTKVNLRYIDSEDIEQQGTSLLEGVDAILVPGGFGLRGVEGK	TDAYKSLNBALIHAGIHTRHKVQISYIDSBTIBABGTAKLKNVDAILVPGGFGBRGVEGK	DTIYRIPSVLHAQGLDDIVVBRFGLBCGQADLSEWDRVVDAKLNPEREVTIAMVGKYMEL	DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH	TAGETKTKPTQHSVKELRSIGLQPDVLVCRSDHPIDVSSRKIALFTNVEERAVIALEDV	IPASE	EIKRRIIKGAGDADVALVEIGGTVGDIBSQPFLEAIRQLRVEIGAKRAMLMHLTLVPYIA	EIKRRYYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK	VIQDGAETBLDLGHYERFVRTIMTQNNNPTTGRVYMDVLRKERRGDYLGATVQVIPHITD	VTEDGARTDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD	MTRY1FVTGGVVSSIGKGIASASLAAILEARGLKITMLKLDPYINVDPGTMSFFQHGEVF	MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTKSPFQHGEVF	B 2; -121; 91;		A;Residues: 1-542 <sto> A;Cross_references: GB.AE004783; GB:AE004091; NID:g9949786;</sto>		PMID:10984043)) !	Coulter, S.N.; Folger,	00 #text	Pseudomonas aeruginosa	
STEFLE	LEGVDA	LKNVD	DAKLINE	CLTHE	RRKIAI	RRKIAI	RVBIG	TULL	RKERR	RNERKGD	EDPYIN	LDPYIN	Length Indels		49786		10984043		700			
- H	LILVEG	DANTIL	PEREVI	PEDEVS	FTNVE	PTNV	\KRAMI	RDRALF	FOTAGE	TOTAGE	NVDPGI	NDPG	th 542 els				x 55057		Warrener, K.R.; Kas,	_change	(strain	
: 	GPGLA	GFGER	IAMVG	HAIVG	ERAVI	BKAVI	WHETT	TLIHI	TVQVI	IVQVI	MSPFC	MSPFC	0;		: AAGO			ŝ		31-Dec	PAO1)	
	GVEGK	GVEGK	KYMEL	KYVDH	ALEDV	SAIDA	VPYIA	VPYIK	PHITD	CTIHE	HGEVE	HGEVE	Gaps		PIDN:AAG07025.1;		מביים ביים ביים מיידים		P.; Hi A.; La	C-2000		
420	360	360	300	300	240	240	180	180	120	120	60	60	0,		1; GSI			<u>.</u>	Hickey, Larbig,	0		
															GSPDB:GN001:		ć		× 3			
															10013		Source of	,	; Bri Lim,			

Ş 뒩

δ 녆

```
A;Gene: STY3082
C;Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Cross-references: GB:AL513382; C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Residues: 1-545 < PAR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S.; Moule, S.; O'Gaora, P.
Nature 413, 848-852, 2001
A;Authors: Parry, C.; Quail, M.; Rutherford, K.; Simmonds, M.;
A;Title: Complete genome sequence of a multiple drug resistant
A;Reference number: AB0502; MUID:21534947; PMID:11677608
A;Accession: AD0859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTP synthetase (imported) - Salmonella enterica subsp. enterica serovar Typhi C;Species: Salmonella enterica subsp. enterica serovar Typhi A;Note: this species has also been called Salmonella typhi C;Date: 09-Nov-2001 #sequence_revision 09-Nov-2001 #text_change 18-Nov-2002 C;Accession: AD0859
R;Parkhill, J.; Dogan, G.; James, K.D.; Thomson, N.R.; Pickard, D.; Wain, ith, T.; Connerton, P.; Cronin, A.; Davis, P.; Davies, R.M.; Dowd, L.; White
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         T.; Connerton, P.; ...
       483
                                        482
                                                                         423
                                                                                                           422
                                                                                                                                            363
                                                                                                                                                                               362
                                                                                                                                                                                                              303
                                                                                                                                                                                                                                                 302
                                                                                                                                                                                                                                                                                   243
                                                                                                                                                                                                                                                                                                                  242
                                                                                                                                                                                                                                                                                                                                                     183
                                                                                                                                                                                                                                                                                                                                                                                        182
                                                                                                                                                                                                                                                                                                                                                                                                                         123
                                                                                                                                                                                                                                                                                                                                                                                                                                                           122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    367;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                               AGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE 481
                                                                                                                                                                                                                                                                                                                  TIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHT 301
                                                                                                                                                                                                                                                                                                                                                 AGEVKTKPTQHSVKGLLSIGIQPDILICRSDRAVPANERAKIALFCNVPEKAVISMKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                    IKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EQAGLKISGRSGDGALVEVVEAPEHPWFVACQFHPEFTSTPRDGHPLFSGFVNAALKY 538
                                    AAGMKFSGKSLDGRIVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHK 539
                                                                                                                                            ATARYAREMNI PYLGI CLGMQVALI EFARNVAGMDNANSTEFVPDCKYPVVALI TEWRDE
                                                                                                                                                              STVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEMMDE
                                                                                                                                                                                                              DAYKSVIEALKHGGLKNRVIVNIKLIDSQDVETRGVEILKDLDAILIPGGFGYRGVEGKI
                                                                                                                                                                                                                                               DAYKSLNEALIHAGIHTRHKVQISYIDSETIBAEGTAKLKNVDAILVPGGFGERGVEGKI 361
                                                                                                                                                                                                                                                                                 STYKIPGLIKSOGLDDYICKRPSINCPEANLSEWEQVIYEEANPAGEVTIGWVGKYIELP
                                                                                                                                                                                                                                                                                                                                                                       AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TEDGAETDLDLGHYERFLKTTWIKKNNFTTGQVYEQVLRNBRKGDYLGATVQVIPHITDE 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVBAAAKH 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATGATEIRTEASDLGGTMRLGAQECQLQTGTLVHDCYAKDVIVERHRHRYEVNMNLLPQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQL
   AAGLRVAGRSGDDQLVEIIEVPNHPWFVACQFHPBFTSTPRDGHPLFAGFVKAANEHQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TEDGAETDLDLGHYERFIRTKMSRRNNFTTGRIYSDVLRKERRGDYLGATVQVIPHITNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TNYIFVTGGVVSSLGKGIAAASLAAILEARGLNVTIMKLDPYINVDPGTMSPIQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ISTVQYARENKIPYLGICLGMQVAVIEYARNVLGWSDANSTEFDKSSGHPVVGLITEWQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CTP synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   68,2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mes, K.D.; Thomson, N.R.; Pickard, D.; Wain, J.; Churcher, A.; Davis, P.; Davies, R.M.; Dowd, L.; White, N.; Farrar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 73;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PIDN: CAD06059.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 1946; DB
Pred. No. 3e-117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PID:g16504026; GSPDB:GN00176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Skelton, J.; Stevens, Salmonella enterica s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Typhi
   540
                                                                                                                                            422
                                                                                                                                                                             421
                                                                                                                                                                                                              362
                                                                                                                                                                                                                                                                                                                                                                                                                         182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               480
                                                                                                                                                                                                                                                                                   302
                                                                                                                                                                                                                                                                                                                                                   242
                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sero
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ×
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      G
RESULT 4

SYECTP
SYPECTP
CTP synthase (EC 6.3.4.2) [validated] - Escherichia coli (strain K-12)
N;Alternate names: CTP-synthetase; UTP-ammonia ligase
C;Species: Escherichia coli
C;Date: 31-Mar-1998 #sequence revision 21-Nov-1997 #text_change 01-Mar-2002
C;Accession: H65059; A25608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Gene: VC2448
A; Map position:
C; Superfamily:
                                                                                                                                                            문
                                                                                                                                                                                    S
                                                                                                                                                                                                                           문
                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                  문
                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Genetics:
                                                                                                                                                            483
                                                                                                                                                                                              482
                                                                                                                                                                                                                               423
                                                                                                                                                                                                                                                                422
                                                                                                                                                                                                                                                                                                 363
                                                                                                                                                                                                                                                                                                                                    362
                                                                                                                                                                                                                                                                                                                                                                      303
                                                                                                                                                                                                                                                                                                                                                                                                       302
                                                                                                                                                                                                                                                                                                                                                                                                                                          243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          362;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            년
급
```

밁 S 9 á 뮍 S g Š 밁 Ş 뮹 Ş g δ dd Ş ğ 8

```
RESULT 3

B82074

CTP synthase VC2448 [imported] - Vibrio cholerae {strain N16961 serogroup O: C;Species: Vibrio cholerae

C;Species: Vibrio cholerae

C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 02-Feb-2001

C;Accession: E82074

C;Accession: B82074

C;Accession: B82074

C;Accession: B82074
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Molecule type: DNA
A;Residues: 1-545 (HEI>
A;Cross-references: GB:AE004315; GB:AE003852; NID:g9657024; PIDN:AAF95590.1; GSPDB:GN001
A;Experimental source: serogroup O1; strain N16961; biotype El Tor
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Title: DNA Sequence of both chromosomes of the cholera A;Reference number: A82035; MUID:20406833; PMID:10952301 A;Accession: B82074 A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R;Heidelberg, J.F.; Eisen, J.A.; Nelson, W.C.; Clayton, R.A.; Gwinn, M.L.; Dodson, R.J. chardson, D.; Ermolaeva, M.D.; Vamathevan, J.; Bass, S.; Qin, H.; Dragoi, I.; Sellers, I. R.R.; Mekalanos, J.J.; Venter, J.C.; Fraser, C.M.
Nature 406, 477-483, 2000
                                        AAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGELKTKPTQHSVKBLRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
KAGLKVSGLSADXXLVEVIENEAHPWEVAAQPHPETSTPRDGHPLFAGFVKAAGQ
                                                                                                                                                            AGELVTRDEDSDIGGTMRIGAQKCRIKADSLAFQLYQKDVITERHRHRYEFNNQYIKQLE
                                                                                                                                                                                                                   RAAQYARENKI PYLGI CLGMQVALI BYARNVAGMEGAHSTEFNKNTKY PVVGLI TEWVDG
                                                                                                                                                                                                                                                   STYRFARENKIPYLGICLGMQSAVIBFARNVVGLEGAHSTEFLPKSPHPVIGLITEMMDE
                                                                                                                                                                                                                                                                                                                         DAYKSVNEALKHAGIKNRLSVTIKYVDSQDVETKGTDVLNGLDAILVPGGFGDRGIEGKI
                                                                                                                                                                                                                                                                                                                                                                 DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                       SIYKIPQLIRSQGLDDLVCARFGINAPEADLSEWEQVIYEEANPTGEVTIGWVGKYTELP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TIYRIPLILREQGLDDLYVDQLRLDVPAADLSAWEKVVDGLTHFTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IKDRVIAGSEGHDIAIVEVGGTVGDIESLPFMBAIRQLAIEVGREHAMFWHLTLVPYLAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TEDGAETDLDLGHYERELKTIMTKKNNFTTGOVYBQVLRNERKGDYLGATVQVIPHITDB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TKPIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                           EGNVEERSEKSDIGGTMRIGSQLCHLEKGTKAYELYGSATIHERHRHRYEVNNLLRPQIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGEVKTKPTOHSVKELLSIGIOPDILVCRSDRMIPANERKKIALFCNVPEKAVISMKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TEDGAETDLDLGHYERFIRTKWIKRNNFTAGRVYADVLRKERRGDYLGATIQVIPHITNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TNYIFVTGGVVSSLGKGIAAASLAAILEARGLKVTMKLDPYINVDPGTMSPTQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             69.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      76;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 1924; DB 2;
Pred. No. 7.7e-116;
6; Mismatches 98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                pathogen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             545;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Vibrio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                         537
     538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cholerae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                  481
                                                                                                                                                                                                                      422
                                                                                                                                                                                                                                                                          421
                                                                                                                                                                                                                                                                                                                           362
                                                                                                                                                                                                                                                                                                                                                                                   361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                 482
                                                                                                                                                                                                                                                                                                                                                                                                                                          302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R.J.;
ers, F
```

```
RESULT 5
H91083
CTP synthetase
                                                                                                                                   밁
                                                                                                                                                                  8 B 8
                                                                                                                                                                                                                                                                    닭
                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ś
                                                                                  음 &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   皮
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Description: this glutamine amidotransferase catalyzes the term: C;Superfamily: CTP synthase C;Keywords: homodimer; ligase; pyrimidine nucleotide biosynthesis F;2-545/Product: CTP synthase #status experimental <MAT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       J. Biol. Chem. 261, 5568-5574, 1986
A; Title: Nucleotide sequence of Escherichia coli pyrG encoding A; Reference number: A92584; MUID:86168304; PMID:3514618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Cross-references: GB:AE000361; GB:U00096; NID:g2367160; A;Experimental source: strain K-12, substrain MG1655 R;Weng, M.; Makaroff, C.A.; Zalkin, H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A.; Rose, D.J.; Mau, B.; Shao, Y.
Science 277, 1453-1462, 1997
A;Title: The complete genome sequence of Escherichia coli
A;Reference number: A64720; MUID:97426617; PMID:9278503
A;Accession: H65959
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 C; Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A, Map position: 60 min
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Molecule type: DNA
A;Residues: 1-337,'L',339-475,'S',477-488,'RA',491-545
A;Cross-references: GB:M12843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Residues:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            R; Blattner, F.R.; Plunkett III,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Status: preliminary; nucleic acid sequence not shown; translation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ;Complex: homodimer; aggregates to a tetramer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ;Gene: pyrG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches 363;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Accession: A25608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                           303
                                                                                 483
                                                                                                               482
                                                                                                                                               423
                                                                                                                                                                            422
                                                                                                                                                                                                            363
                                                                                                                                                                                                                                           362
                                                                                                                                                                                                                                                                                                         302
                                                                                                                                                                                                                                                                                                                                         243
                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                      183
                                                                                                                                                                                                                                                                                                                                                                                                                                      182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1-545 <BLAT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                            AAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAK 537
                                                                                                                                         NGNVEVRSEXSDIGGTVRLGAQQCQLVDDSLVRQLYNAPTIVERHRHRYEVNNMLLKQIE
                                                                                                                                                                AGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                         TARFARENNIPYLGICLOMOVALIDYARHVANMENANSTEFVEDCKYPVVALITEWRDE
                                                                                                                                                                                                                                       STVRFARENKI PYLGICLEMOSAVIEFARNVVGLEGAHSTEFLEKSPHEVIGLITEWNDE
                                                                                                                                                                                                                                                                       DAYKSVIEALKHGGLKNRVSVNIKLIDSQDVETRGVEILKGLDAILVPGGFGYRGVEGMI
                                                                                                                                                                                                                                                                                        DAYKSINEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                        SIYKIPGLIKSQGLDDYICKRFSINCPEANLSEWEQVIFEEANPVSEVTIGMVGKYIELP
                                                                                                                                                                                                                                                                                                                                                                   TIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                                           AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TEDGAETDLDLGHYERFLKTTMTKKKNFTTGQVYEQVLRNERKGDYLGATVQVIPHITDE 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPPQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                     SGEVKTKPTQHSVKELLSIGIQPDILICRSDRAVPANERAKIALFCNVPEKAVISLKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TEDGAETDI.DI.GHYERFIRTKMSRRNNFTTGRIYSDVLRKERRGDYLGATVQVIPHITNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               THY IF TIGGY VSSLGKG TAPASLAAILEARGLN TIMKLD PYINVD PGIMSPIQHGEV FV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                68.7%;
67.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ۲. .
نو
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 1916; DB 1;
Pred. No. 2.5e-115;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches 102; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bloch, C.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             catalyzes the terminal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Perna, N.T.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PIDN:AAC75822.1;
 substrain RIMD 0509952)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Burland,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        synthetase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      i
i
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           reaction in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ٧.
                                                                                                                                                                            481
                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                         362
                                                                                                                                                                                                                                                                                                      361
                                                                                                                                               482
                                                                                                                                                                                                          422
                                                                                                                                                                                                                                                                                                                                      302
                                                                                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                                                                                                                                                                                                                                   242
                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Riley,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PID:g1789142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ႙
A;Title: Genome sequence of enterohemorrhagic Escherichia coli
A;Reference number: A85480; MUID:21074935; PMID:11206551
A;Accession: A85929
A;Status: preliminary
A;Molecule type: DNA
                                                                            R;Perna, N.T.; Plunkett III, G.; Burland, V.; iller, L.; Grotbeck, E.J.; Davis, N.W.; Lim, Nature 409, 529-533, 2001
                                                                                                                         C;Species: Escherichia coli
C;Date: 16-Feb-2001 #sequence_revision
C;Accession: A88929
                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                          몽
                                                                                                                                                                                                                                                                                   Q
                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                     무
                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            벍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
```

[imported]

Escherichia

0011

(strain 0157:H7,

16-Feb-2001 #text_change

14-Sep-2001 J.D.; Rose,
Potamousis,

A.; Dimalanta, E.;

D.J.;

O157:H7

```
C;Species: Escherichia coli
C;Accession: H91083
R;Hayashi, T; Makino, K.; Ohnishi, M.; Kurokawa, K.; Ishii, K.; Yokoyama, K.; H.
gasawara, N.; Yasunaga, T.; Kuhara, S.; Shiba, T.; Hattori, M.; Shinagawa, H.
DNA Res. 8, 11-22, 2001
A;Title: Complete genome sequence of enterohemorrhagic Escherichia coli O157:H7
A;Reference number: A99629; MUID:21156231; PMID:11258796
A;Accession: H91083
A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Gene: EC83640
C;Superfamily: (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Experimental source: strain C; Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Cross-references: GB:BA000007; PIDN:BAB37063.1; PID:g13363111; GSPDB:GN00154
A;Experimental source: strain O157:H7, substrain RIMD 0509952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: DNA
A; Residues: 1-545 < HAY>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                 482
                                                                                                                                                                                                                        423
                                                                                                                                                                                                                                                               422
                                                                                                                                                                                                                                                                                                        363
                                                                                                                                                                                                                                                                                                                                               362
                                                                                                                                                                                                                                                                                                                                                                                                                               302
                                                                                                                                          483
                                                                                                                                                                                                                                                                                                                                                                                      303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    363;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           N
                                                                                                                                        DAGLRVAGRSGDDQLVEIIEVPNHPWFVACQFHPBFTSTPRDGHPLFAGFVKAASE
                                                                                                                                                         AAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAK 537
                                                                                                                                                                                                                                                AGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQL3
                                                                                                                                                                                                                                                                                                      TTARFARENNI PYLGI CLGMQVALI DYARHVANMENANSTEFVPDCKYPVVAL I TEWRDE
                                                                                                                                                                                                                                                                                                                                    STVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEMMDE
                                                                                                                                                                                                                                                                                                                                                                                                                           DAYKSINEALIHAGIHTRHKVQISYIDSETIEAEGTAKIKNVDAILVPGGFGERGVEGKI 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SIYKIPGLLKSQGLDDYICKRPSLNCPEANLSEWEQVIFEEANPVSEVTIGMVGKYIELP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHT 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NGNVEVRSEKSDLGGTMRLGAQQCQLVDDSLVRQLYNAPTIVERHRHRYBVNNMLLKQIB
                                                                                                                                                                                                                                                                                                                                                                                    DAYKSVIBALKHGGLKNRVSVNIKLIDSQDVETRGVEILKGLDAILVPGGFGYRGVEGMI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TKF1F1TGGWVSSLGKG1AASSLAA1LEDRGLKVT1TKLDPY1NVDPGTMSPPQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TEDGAETDLDLGHYERFIRTKMSRRNNFTTGRIYSDVLRKERRGDYLGATVQVIPHITNA 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TNYIFVIGGVVSSLGKGIAAASLAAILEARGLNVTINKLDPYINVDPGINSPIQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IKERVLEGGEGHDVVLVEIGGTVGDIESLPFLEAIRQMAVEIGREHTLFMHLTLVPYMAA 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TEDGAETDLDLGHYERFLKITMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVI PHITDE 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTP synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   68.7%;
67.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 1916; DB 2;
Pred. No. 2.5e-115;
1; Mismatches 102;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                    substrain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0,
                                    EDL933)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      302
                                                                                                                                                                                                                          482
                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                      422
                                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                                                                                      362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Han,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           genon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     റ.ം.
```

```
A;Status: preliminary
A,Molecule type: DNA
A,Holecule type: DNA
A,FResidues: 1-545 < KUR>
A;Cross-references: GB:AL590842; PIDN:CAC92607.1; PID:g15981303; GSPDB:GN00175
C;GenetLos:
A;Groe: pyrG
C;Superfamily: CTP synthase
C;Keywords: ligase
                                                                                                                                                                                                                   CTP synthase (EC 6.3.4.2) [imported] - Yersinia pestis (strain CO92)
(;Species: Yersinia pestis
C;Date: 02-Nov-2001 #sequence_revision 02-Nov-2001 #text_change 27-Nov-2001
C;Accession: AC0410
C;Accession: AC0410
R;Parkhill, J:; Wren, B.W.; Thomson, N.R.; Titball, R.W.; Holden, M.T.G.; Prentice, deno-Tarraga, A.M.; Chillingworth, T.; Cronin, A.; Davies, R.M.; Davis, P.; Dougan, il, M.; Rutherford, K.; Simmonds, M.; Skelton, J.; Stevens, K.; Whitehead, S.; Barre Nature 413, 523-527, 2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Gene: pyrG
C;Superfamily: CTP synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Residues: 1-545 <STO>
A;Cross-references: GB:AE005174; NID:g12517252; PIDN:AAG57893.1; GSPDB:GN00145; A;Experimental source: strain O157:H7, substrain EDL933 C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       당
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ś
                                                                                                                                                                                           A;Title: Genome sequence of Yersinia pestis, the causative agent of plague A;Reference number: AB0001; MUID:21470413; PMID:11586360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                               A; Accession: AC0410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
Matches 363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  363;
al Similarity
356; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2 TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                             DAGLRVAGRSGDDQLVEIIEVPNHPWFVACQFHPEFTSTPRDGHPLFAGFVKAASE 538
                                                                                                                                                                                                                                                                                                                                                                                                                                        AAGMKFSGKSLDGRIVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAK 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NGNVEVRSEKSDLGGTMRLGAQQCQLVDDSLVRQLYNAPTIVERHRHRYEVNNMLLKQIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTARFARENNIPYLGICLGMQVALIDYARHVANMENANSTEFVPDCKYPVVALITEMRDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STVREARENKI PYLGI CLGMQSAVI EFARNVVGLEGAHSTEFL PKSPHPVIGLI TEMMDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DAYKSVIEALKHGGLKNRVSVNÍKLÍDSQDVETRGVEILKGLDAILVPGGFGYRGVEGMI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STYKTPGLLKSOGLDDYTCKRFSLNCPBANLSEWEOVIFERANPVSEVTIGMVGKYIBLP 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SGEVKTKPTQHSVKELLSIGIQPDILICRSDRAVPANERAKIALFCNVPEKAVISLKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ÎKBRVLEGGEGHDVVLVEIGGTVGDIESLPFLEAIRQMAVEIGREHTLFMHLTLVPYMAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TEDGAETDLDLGHYERFIRTKMSRRNNFTTGRIYSDVLRKERRGDYLGATVQVIPHITNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TEDGAETDLDLGHYERFLKTTWTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITDE 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TNYIFVTGGVVSSLGKGIAAASLAAILEARGLNVTIMKLDPYINVDPGTMSPIQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
            66,5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              68.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           71;
 90;
Score 1909; DB 2;
Pred. No. 7.1e-115;
0; Mismatches 102;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 1916; DB 2;
Pred. No. 2.5e-115;
1; Mismatches 102;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                           Length 545;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                545;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0,
 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          482
 0
                                                                                                                                                                                                                                             Barrell,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         UWGP:Z40
                                                                                                                                                                                                                                                     G. M. B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             당
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
              Q
                                           밁
                                                                        S
                                                                                                       밁
                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                 Query Match
Best Local S
Matches 364
                 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62
                                              63
                                                                           62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N
```

```
CTP synthase (BC 6.3.4.2) - Haemophilus influenzae (strain Rd KW20)
C;Species: Haemophilus influenzae
C;Species: Haemophilus influenzae
C;Species: Haemophilus influenzae
C;Jate: 18-Aug-1995 #sequence_revision 18-Aug-1995 #text_change 16-Jul-1999
C;Accession: F64181
R;Fleischmann, R.D.; Adams, M.D.; White, O.; Clayton, R.A.; Kirkness, B.F.; Kerlavage, J. Gocayne, J.D.; Scott, J.; Shirley, R.; Liu, L.I.; Glodek, A.; Kelley, J.M.; Weidman, Gocayne, J.D.; Frandon, R.C.; Fine, L.D.; Fritchman, J.I.; Fuhrmann, J.I.; Geoghagen, N.S.M.
Science 269, 496-512, 1995
R;Authors: Gnehm, C.L.; McDonald, L.A.; Small, K.V.; Fraser, C.M.; Smith, H.O.; Venter, A;Authors: Gnehm, C.L.; McDonald, L.A.; Small, K.V.; Fraser, C.M.; Smith, H.O.; Venter, A;Fitle: Whole-genome random sequencing and assembly of Haemophilus influenzae Rd.
A;Reference number: A64000; MUID:95350630; PMID:7542800
A;Recession: F64181
                                                                                                                                                                                                                                                                                                                                                                                                                                A;Cross-references: GB:U32788; GB:L42023; NID:g1574629; C;Superfamily: CTP synthase C;Keywords: ligase; pyrimidine nucleotide biosynthesis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Molecule type: DNA
A; Residues: 1-545 < TIGR >
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Status: nucleic acid sequence not shown; translation not shown
                                                                                                                                                                                                                                                                                                                     364;
                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHK 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SIYKIPGLLKSQGLDDYICKRFSLTCPEANLAEWEQVLYEESNPGGEVTIGMIGKYVELP
IKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                     TNYIFYTGGVVSSLGKGIAAASLAAILEARGLNVTIMKLDPYINVDPGTMSPTQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AGEL VIRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYBFNNQYLKQLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LAARYAREHNIPYLGICLGMQVALMEFARNVAGMENANSTEFVFDCKYPVVALITEWRDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEMMDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKOVDAILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGEVKTKPTQHSVK3LLSIGIQPDVLICRSDRAVPANERAKIALFCNVPBKAVISLKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TEDGAETDLDLGHYERFIRTKMTRRNNFTTGRIYSEVLRKERRGDYLGATIQVIPHITNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TEDGAETDLDLGHYERFLKTIMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITDE 121
                                                                                                                                                                                                                                                               TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DGNVEIRTEESDLGGTMRVGGQQCHLTEGSLVRQMYGEPTIVERHRHRYEVNNMLLKQIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IKERI I EGGEGHD VVLVEI GGTVGDIESL PFLEAIROMAVDVGREHTLYMHLTL V PYLAA
                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                 68.5%; Score 1908.5; DB 2; 67.5%; Pred. No. 7.6e-115;
                                                                                                                                                                                                                                                                                                                        Mismatches 103;
                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PIDN: AAC22733.1;
                                                                                                                                                                                                                                                                                                                        1;
                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PID:g1574630;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182
                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                              122
                                                                                                                                                    121
                                                                                                                                                                                                           62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      362
                                                                                                                                                                                                                                                                     61
```

د ک

420

300

```
A; Contents: ann
C; Genetics:
A; Gene: XF1200
C; Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Experimental source: strain 9a5c

R;Simpson, A.J.G.; Reinach, F.C.; Arruda, P.; Abreu, F.A.; Acencio, M.; Alvarenga, R.; Arridan, R.S.; Bueno, M.R.P.; Camargo, A.A.; Camargo, L.E.A.; Carraro, D.M.; Carrer, H. Briones, M.R.S.; Bueno, M.R.P.; Camargo, A.A.; Camargo, L.E.A.; Carraro, D.M.; Carrer, H. Briones, B.R.; Docena, C.; El-Dorry, H.; Facincani, A.P.; Ferreira, A.J.S. submitted to GenBank, June 2000

A;Authors: Ferreira, V.C.A.; Ferro, J.A.; Fraga, J.S.; Franca, S.C.; Franco, M.C.; Frohm J.D.; Junqueira, M.L.; Kemper, B.L.; Kitajima, J.P.; Krieger, J.B.; Kuramae, E.B.; Laign Chado, M.A.; Madeira, M.M.; Madeira, H.M.F.; Marximo, C.L.; Marques, M.V.; Martins, E.A.; Machins, E.M.F.; Matsukuma, A.Y.; Menck, C.F.M.; Miracca, B.C.; Miyaki, C.Y.; F.G.; Nurnes, L.R.; Ollveira, M.A.; de Oliveira, M.C.; de Oliveira, R.C.; Palmieri, D.R. Rodrigues, V.; Rosa, A.J. de M.; de Rosa Jr., V.B.; de Sa, R.G.; Santelli, R.V.; Sawasak A;Authors: da Silva, A.J., da Silva, R.G.; Verjovski-Almeida, S.; Vettore, A.L.; A.R. Palmieri, D.R. Rodrigues, V.; Rosa, A.J., da Silva, R.G.; Santelli, R.V.; Sawasak A;Authors: da Silva, R.G.; da Silva, R.G.; Santelli, R.V.; Sawasak A;Authors: da Silva, R.G.; Verjovski-Almeida, S.; Vettore, A.L.; A.R. Palmieri, D.R.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Title: The genome sequence of the plant pathogen Xylella fastidiosa. A;Reference number: A82515; MUID:20365717; PMID:10910347 A;Note: for a complete list of authors see reference number A59328 bel A;Accession: C82700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTP synthetase XF1288 (imported) - Xylella fastidiosa (strain 9a5c)
C;Species: Xylella fastidiosa
C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 02-Sep-2000
C;Date: 18-Aug-2000
C;Accession: C82700
R;anonymous, The Xylella fastidiosa Consortium of the Organization for Nucleotide
Nature 406, 151-157, 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           å
Ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                   Ś
                                                                                                                                 유정
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Cross-references: GB:AE003962; GB:AE003849; NID:g9106270; PIDN:AAF84097.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Residues: 1-554 <SIM>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Contents: annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               123
                                                                                                                                                                                                                                                                                  361;
   5
                                                                  ξ.
                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EGNTEVRTDESDIGGTMRIGAQQCHLVSGSRARELYGKETIEBRHRHRYEVNNTLLPQIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DAYKSLNEALIHAGIHTRHKVQISYIDSETIBAEGTAKLKAVDAILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                VTBDGAETDLDLGHYBRELKTIMTKKNNETTGQVYEQVLRNERKGDYLGATVQVIPHITD 120
                                                                                                                                                                                 MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAA-AKHK 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RTAQVARENKI PYLGICLGMQIALIEYARNVAGLTKANSSEFDKDCEQPVVALITEWQDA 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STVRFARENKI PYLGICICMQSAVIEFARNYVGLEGAHSTEFL PKSPHPVIGLI TEWMDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SIYQIPALLKSQGLDDFVCERFRLTCPEADLTEWEQVLYKQANPVGEVTIGMVGKYTELP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TIYRIPLLIREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KAGLKVIGLSADKKLVBIIEVPNHPWFVACQFHPEFISTPRDGHPLFAGFVKAAYENHK 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGELVTRDEDSDLGGTMRLGAQXCRLXADSLAFQLYQKDVITERHRHRYEFNNQYLXQLE 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DAYKSVNEALKHAGLTNRLSVNIKYIDSQDVETKGVEVLKGIDGILVPGGFGYRGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGEVKTKPTQHSVKELLSIGTQPDVLICRSDRMIPPNERAKIALFCNVAERAVISLKDVM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IKDRVIAGAQGHDVVIVEVGGTVGDIESLPFLEALRQLAVQVGREHTLFMHLTLVPYIPT
VTDDGAETDLDLGHYERFVRTRLSRNNSVTTGRIYQNVICKERRGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                       CIP
                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                       synthase
                                                                                                                                                                                                                                                                          68.3%; Score 1905; DB 2;
66.1%; Pred. No. 1.3e-114;
ative 79; Mismatches 102;
                                                                                                                                                                                                                                                                                                                                                Length 554;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A59328 below
                                                                                                                                                                                                                                                                              ٠.
                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             302
                                                                                                                                            60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GSPDB:GN00:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Gene:
C;Superf
C;Keywor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 10
F81798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTP synthase (EC 6.3.4.2) NMA1742 [imported] - Neisseria meningitidis (strain C;Species: Neisseria meningitidis C;Species: Neisseria meningitidis C;Date: 05-May-2000 #sequence_revision 05-May-2000 #text_change 02-Feb-2001 C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Accession: F81798
C;Ac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-544 <PAR>
A;Cross-references: GB:AL162757; GB:AL157959; NID:g7380371;
A;Experimental source: serogroup A, strain Z2491
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Title: Complete DNA sequence of a serogroup A strain of Neisseria menigitidis Z2491.
A;Reference number: A81775; MUID:20222556; PMID:10761919
A;Accession: F81798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
Ś
                                                                      밁
                                                                                                                             Ś
                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gene: pyrG; NMA1742
Superfamily: CTP synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             358;
                                                                                                                                                                                                                   62
                                                                                                                                                                                                                                                                              62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                  MTXFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDFYINVDPGTMSFFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ARKAGG 546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KHKTQG 542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RTTTGEVERRDEKSDIGGTMRIGIQEQRIKAGTIVREIYGRDVVGERHRHRYEFNNRYRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | DTIYRIPLLLREQGLDDLVVDQLRLDVPA--ADLSAWEKVVDGLTHPTDEVSIAIVGKYV 298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAGELKTKPTQHSVKELRSIGIQPDVLLCRSEQVIPDSERRKIALFTNVSERAVIGCPDI 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MTKFIFVTGGVVSSLGKGIAAASIAAILBSRGLNVTMLKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MDEAGELVTRDEDSDIGGTMRIGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLK 478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GKVLASRYARBORVÞYFGICYGMQAAVVDYARHVAGLEGANSTENDROSPHPVIALITEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DYQDAYKSVGEALKHGGLRQRTKVNLKWVEAQDLEGSDMGALKDIDGILVPGGFGDRGFE 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DVLYGMPLELRROGLDEIVIDQFKLSGTASLADLSEWEDVVDAIKHPLDEVTIAVVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SAGELKTKPTOHSVKELRTIGIQPDILICRSEQPIPASERRKIALPTNVAEKAVISAIDA
                                                                                                                  BIKRRYYBSAEGKDYALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK 180
                                                                                                                                                                                                                                                                          VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QLEDAGLVIAAKSMDDTLVEMIBLPREMHPWFLACQAHPEFLSTPRDGHPLFIGFVKAAR 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QLEAAGMKFSGKSLDGRLVEIIELPE--HPWFLACQFHPEFTSTPRNGHALFSGFVEAAA 536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEW 418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DHTDAYKSLNBALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGBRGVE 358
   SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA 240
                                                                             BIKRRIHEGAAGYDVAIVEIGGTVGDIESLPFLEAIRQMRSQLGRNNTLFAHLSYVPYIA 180
                                                                                                                                                                                                                   VTDDGABTDLDLGHYERFIDSTMTRRNSFSTGQVYENVIAKERRGDYLGGTVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             67.9%; Score 1892.5; DB 2
66.1%; Pred. No. 8.1e-114;
tive 80; Mismatches 101;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PIDN:CAB84970.1; PID:g7380384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3
```

S.R.; More Rajandream

Z2491

seros

120

망 γQ 밁 Ş В

밁 S 8 S D. S Ŗ 3

```
R;Tettelin, H.; Saunders, N.J.; Heidelberg, J.; Jeffries, A.C.; Nelson, K.E.; Eisen, i. Hickey, E.K.; Haft, D.H.; Salzberg, S.L.; White, O.; Pleischmann, R.D.; Dougherty, B. Fri, H.; Qin, H.; Vamathevan, J.; Gill, J.; Scarlato, V.; Masignani, V.; Pizza, M. Science 287, 1809-1815, 2000

Science 287, 1809-1815, 2000

A;Authors: Grandi, G.; Sun, L.; Smith, H.O.; Fraser, C.M.; Moxon, E.R.; Rappuoli, R.; A;Title: Complete genome sequence of Neisseria meningitidis serogroup B strain MC58: A;Reference number: A81000; MUID:20175755; PMID:10710307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTP synthase NMB1554 [imported] - Neisseria meningitidis (strain MC58 serogroup C;Species: Neisseria meningitidis C;Decies: Neisseria meningitidis C;Date: 31-Mar-2000 #sequence_revision 31-Mar-2000 #text_change 19-Jan-2001 C;Accession: F81070
                                                                                                                                                                                                                                                                                                                                                                                                                           A;Gene: NMB1554
C;Superfamilv.
                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Residues: 1-544 <TET>
A;Cross-references: GB:AE002505;
A;Experimental source: serogroup
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Accession: F81070
                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local S
Matches 359
                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                     241
                                                        181
                                                                                            181
                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                     359;
                                                                                                                                                                                                        61
                                                                                                                                                                                                                                           61
                                                    QTADGSVETRDESADLGGTMRLGAQEVELKAGSLAAKIYGSEHIREMHRHYEVNNNYVP 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEG--TAKLKNVDAILVPGGFGERGVE 358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DSIYECPEMLHDQGIDNIITEQIQLNVQQADLTAWKKIVHAIQNPKHTVKIAMVGKYVDL 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BIKRRVYESAEGKDVALIEVGGTVGDIBSLPFLETIRQMGVELGRDRALFIHLTLVPYIK 180
                                                                                                                                                                                                                                                                              MTKFIPVTGGVVSSLGKGIAAASIAAILESRGLNVIMLKLDPYINVDPGTMSPPQHGEVF
                                                                                                                                                                                                                                                                                                                  MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              联 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TLEQAGLVIGGVSAGRERIVETIELPNHFWFFACQFHPEFTSNPRKGHPLFTAFVKAALN 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QLEAAGMKFSGKSLD-GRIVEIIZLPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAK 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYSFNNQYLK 478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GKIAAVRYARENNVPYLGICLGMQIALIEYARDVAGLKGAMSTEFDLKCAAPVVALIDEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DTIYRIPLLIREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH 300
DTIYRIPLILREQGLDDLVVDQLRLDVPAADLSAMBKVVDGLTHPTDEVSIAIVGKYVDH 300
                                                                                                                               EIKRRIHEGAAGYDVAIVEIGGTVGDIESLPFLEAIROMRSQLGRUNTLFAHLSYVPYIA
                                                                                                                                                                                                      VTDDGAETDLDLGHYERFIDSTWTRRNSFSTGQVYENVIAKERRGDYLGGTVQVIPHITD
                                                                                                                                                                                                                             VTEDGAETDLDLGHYERFLKTTWTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITBW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TESYKSLIEALKHAGVHTETDVQITFVDSESIEKNNGDVSMLKDMDAILVPGGFGSRGVE
                                                                                                                                                                                                                                                                                                                                                                                                                          CTP synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           542
                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                   66.28;
                                                                                                                                                                                                                                                                                                                                                 77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GB:AE002098; NID:g7226794; PIDN:AAF41908.1; PID:g722680
B, strain MC58
                                                                                                                                                                                                                                                                                                                                                                       Score 1888.5; DB 2
Pred. No. 1.5e-113;
                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                        DB 2;
                                                                                                                                                                                                                                                                                                                                                       103;
                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                      Length 544;
                                                                                                                                                                                                                                                                                                                                                     'n
                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         240
                                                          240
                                                                                              240
                                                                                                                                                                                                        120
                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eisen, .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .
A C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Gene: pyrG; BU416
C;Superfamily: CTP |
C;Keywords: ligase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-545 <STO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        R;Shigenobu, S.; Watanabe, H.; Hattori, M.; Sakaki, Y.; Ishikawa, Nature 407, 81-86, 2000
A;Title: Genome sequence of the endocellular bacterial symbiont o A;Reference number: A34930; MUID:20445173; PMID:10993077
A;Accession: B84978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C;Species: Buchnera sp.
C;Date: 02-Mar-2001 #sequence_revision 02-Mar-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           B84978
CTP synthase (EC 6.3.4.2) [imported] - Buchnera sp. (strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      문
                             밁
                                                                      á
                                                                                                             맑
                                                                                                                                         Ś
                                                                                                                                                                                  문
                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                   맑
                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                          ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Cross-references: GB:AP000398; GSPDB:GN00144
A;Experimental source: strain APS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ঠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    C; Accession: B84978
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241 DSIYECPEMLHDQGIDNIITEQLQLNVQQADLTAWKKIVHAIQNPKHTVKIAMVGKYVDL
                                                                                                                                                   240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  332;
                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                        60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62.3%;
Similarity 61.4%;
                                                                                                                                                                                                          KSAGELKTXPTQHSVKELRTIGIQPDILICRSEQPIPASERKIALFTNVAEKAVISAID
                                                                                                                                                                                                                                                                                    DEIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYI
                                                                                                                                                                                                                                                                                                                                                                                                        MTK-FIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDFYINVDFGTMSFFQHGEV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ŗ.
                                     LPDAYKSVMBALKHAGFKNKIKVDIQLIDSQEVENKNFQILKNLNGILIPGGFGDRGIVG
                                                                                                                                                                                    ### ATAGEIKTKPTQHSVKQLLSIGIQPDILICKSEKTVPLHERKKIALFCNVPVDAVISLKO
                                                                                                                                                                                                                                                           NAIKERIILCSENSNIILVBIGGTVGDIBSLPFLBAIROMAVDIGRKNVIYIHLTLVPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             픗
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QLEAAGMKFSGKSLD-GRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QTADGSVETRDESTDLGGTMRLGAQEVELKAGSLAAKIYGSGHIRERHRHRYEVNNYVP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MDEAGELVTRDEDSDLGGTMRLGAQXCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VNSIYKIPKILKNOKLDDYICNYFKLNVPEADLQSWEEVIYAEKNFNNTIVIGIIGKYIK
                                                                                                                                                 ADTIYRIPLLERBOGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVD
                                                                                                                                                                                                                                                                                                                                     PVTEDGAETDLDLGHYERFIHTKWTFLNNPTTGGVYSQVLKKERRGDYLGATIQVIPHIT
                                                                                                                                                                                                                                                                                                                                                           FVTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TLEQAGLVIGGVSAGRERLVETIELPNHPWFFACQFHPEFTSNPRKGHPLFTAFVKAALN 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GKISTVRFARENKIPYLGICIGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAE--GTAKLKNVDAILVPGGFGERGVE
     KISTVRFARENKIPYLGICLGMOSAVIBFARNVVGLEGAHSTEFLPKSPHPVIGLITEWM
                                                                          HTDAYKSLNEALIHAGIHTRHKVQISYIDSETIBAEGTAKLKNVDAILVPGGFGERGVEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TESYKSLIEALKHAGIHTETDVQITFVDSENIEKNKGDVSMLKDMDAILVPGGFGSRGVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; Score 1737; DB 2; pred. No. 7.7e-104; 90; Mismatches 117;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          #text_change 23-Mar-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 545;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   o
Hh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   aphids Buchnera
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                           239
                                                                                                                                                                                                                                                                                                                                                                          119
         419
                                                                              359
                                                                                                                   300
                                                                                                                                                                                                                                                                                                      179
                                                                                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        360
                                             360
                                                                                                                                                       299
                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                  180
                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        N
```

sp. Þ

밁

ô 닭 8 g

Ş 밁 S

δ

S,

움 衫

몺 δ Дb **8** 8

531

not

aeolicus.

Ģ . H Š

```
R;Takami, H.; Nakasone, K.; Takaki, Y.; Maeno, G.; Sasaki, R.; Masui, N.; Fuji, F.; Nucleic Acids Res. 28, 4317-4331, 2000
A,Title: Complete genome sequence of the alkaliphilic bacterium Bacillus halodurans A;Reference number: A83650; MUID:20512582; PMID:11058132
A;Accession: H84123
A;Status: preliminary
A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 13
H84123
CTP synthetase ctrA [imported] - Bacillus halodurans (strain C-125)
CTP synthetase ctrA [imported] - Bacillus halodurans (strain C-125)
C;Species: Bacillus halodurans
C;Date: 01-Dec-2000 #sequence_revision 0i-Dec-2000 #text_change 15-Jun-2001
C;Date: 01-Dec-2000 #sequence_revision 0i-Dec-2000 #text_change 15-Jun-2001
C;Accession; H84123
R;Takami, H; Makasone, K; Takaki, Y; Maeno, G; Sasaki, R; Masui, N; F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Experimental source: strain C; Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Cross-references: GB:AP001520; GB:BA0000004; NID:g10176401; PIDN:BAB07511.1; A;Experimental source: strain C-125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Molecule type: DNA
A; Residues: 1-532 <STO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Simi
Matches 311;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Superfamily:
   479
                                     423
                                                                        419
                                                                                                           363
                                                                                                                                              3
5
8
5
8
                                                                                                                                                                                   303
                                                                                                                                                                                                                      300
                                                                                                                                                                                                                                                         243
                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                 183
                                                                                                                                                                                                                                                                                                                                                                    180
                                                                                                                                                                                                                                                                                                                                                                                                         123
                                                                                                                                                                                                                                                                                                                                                                                                                                              122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TKYI FVTGGVVSSLGKGITAASLGRLLKNRGMKVTIQKFDPYINVDPGTMSPYQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TKF1F1TGGVVSSLGKG1AASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ×
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITEW
                                                                                                                                                                                                        HTDAYKSLNEALHAGIHTRHKVQISYIDSETIEAEGTA-KLKOVDAILVPGGFGERGVE
                                                                                                                                                                                                                                                                                                                               AAAGEMKSKPTQHSVKELRSIGIQPNVIVVRTEKPVPEEMKEKIALFCDIRKDSVIEARD
                                                                                                                                                                                                                                                                                                                                                    KSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TDDGAETDLDLGHYERFIDINLNKNSNVTTGKIYSSVLKKERRGDYLGGTVQVIPHVTNE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIFHITDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KIRAAGLQVTGRSQKONVVEIIELSNHPWFLACQFHPEFTSTPRDGHPLFIDFIKSAGKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NNSSKNYNKIENRINLGGIMRLGSOPCKLSANSLSRKLYNOBIIIERHRHRYEVNNLLFK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QLEAAGMXFSGKSLDGRLVEIIELPEHPWFLACQFHPBFTSTPRNGHALFSGFVEAAAK 537
                                                                                                           GKIEAIRYAREQKIPFLGICLGMQLASIEFARNVLGLEGAHSAEINPDTPHPIIDLLPEQ
                                                                                                                                                                                   LPDAYLSVAEALRHAGYAFDADINIKWVDSBDVTAENVAEQLQGVDGILVPGGPGDRGIB
                                                                                                                                                                                                                                                         ADTLYEVPLDLQAQNLDEIVCDHLNLSCQEADMTEWKSLVEKVKNLSGLVKIALVGKYVA
                                                                                                                                                                                                                                                                                            ADTIYRIPLILAREQGLODLVVDQLRLDVPAADLSAWBKVVDGLTHPTDEVSIAIVGKYVD
                                                                                                                                                                                                                                                                                                                                                                                                         IKERVFRAGRETNADVVITEIGGTVGDIESLPFLEAIRQIKSDIGVDNVMYIHCTLIPYL
                                                                                                                                                                                                                                                                                                                                                                                                                            IKRRVYESAE--GKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                K 539
                                                                      MDEAGELVTRDEDSDLGGTMRLGAQXCRLKADSLAFQLYQKDVITZRHRHRYBFNNQYLK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTP synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           59.0%; Score 1645.5; DB 2; 57.7%; Pred. No. 5.5e-98; tive 90; Mismatches 125;
                                     EDMGGTLRLGLYPCKLKNGTLAQSAYNDQVIYERHRHRYEFNNQYRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  532;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                              418
                                                                                                                                                                                                                                                                                                                                                                                                                                          179
                                                                                                                                                                                                                      358
                                                                                                                                                                                                                                                         302
                                                                                                                                                                                                                                                                                            299
                                                                                                                                                                                                                                                                                                                                                                    239
                                                                                                                                                                                                                                                                                                                                                                                                         182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            480
                                                                                                                                                                                   362
                                                                                                                                                                                                                                                                                                                                 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GSPDB:GNO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hir
RESULT 15
SYBSTP
CTP syntha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Gene:
C;Superf
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTP synthetase - Aquifex aeolicus (;Species: Aquifex aeolicus C;Date: 08-May.1998 #sequence_revision 08-C;Accession: F70415
R;Deckert, G.; Warren, P.V.; Gaasterland,
                                                                                         밁
                                                                                                                      Ş
                                                                                                                                                               밁
                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                 멍
                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                             Дb
                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                    ద
                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                            뫊
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          皮
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: GB:AB000735;
A;Experimental source: strain VF5
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Status: preliminary; nucleic acid
A;Molecule type: DNA
A;Residues: 1-531 <AQF>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A,Title: The complete genome of the hyperthermophilic bacterium A;Reference number: A70300; MUID:98196666; PMID:9537320 A;Accession: F70415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Nature 392,
A; Title: Th
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TP synthetase - Aquifex aeolicus
;Species: Aquifex aeolicus
;Date: 08-May-1998 #sequence_revision 08-May-1998 #text_change 16-Jul-1999
;Accession: F70415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ;Gene: pyrG
;Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
synthase
                                                                                         529
                                                                                                                            541
                                                                                                                                                                 469
                                                                                                                                                                                                    481
                                                                                                                                                                                                                                       416
                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  473
                                                                                                                                                                                                                                                                                                               359
                                                                                                                                                                                                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      309,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             353-358, 1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
 RC
                                                                                                                              ğ
                                                                                           Ä,
                                                                                                                                                                                     EAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHKT
                                                                                                                                                                                                                                                                                                                                                                                       KDSYKSVIEALIHGGIANKVKVNVILKNSEQLDI--SELQEDIHGIMVPGGEGERGIRGK
                                                                                                                                                                                                                                                                                                                                                                                                           TDAYKSLNEALIHAGIHTRHKVQISYIDSETIBABGTAKLKNVDAILVPGGFGBRGVEGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWBKVVDGLTHPTDBVSIAIVGKYVDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SAGELKTKPTQHSVKBLRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EIKESIKRVEKONDIVIVBIGGTVGDIEGLPFLEAVRQLSLELGRKNSMFIHLTYVPYIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVEIGRDRALFIHLTLVPYIK 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MTKF1F1TGGVVSSLGKG1AASSLAA11LEDRGLKVT1TKLDPY1NVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----QKKVDKLGGTMRLGAYPCKVKENTLAHRIYQKDLIYERHRHRYEFNNRYRKDF
                                                                                                                                                                                                                                                                 EAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAPQLYQKDVITERHRHRYEFNNQYLKQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VTEDGAETDLDLGHYERFTNAVMTRDNNVTAGRIYYNVISKERKGDYLGATVQVIPHITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VTEDGAETDLDLGHYERFLKTTWTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                             I BALNFGRENNI PTPGI CLGMQLMAI E PARNVLGPSNANSTEFDPDTPPPVIDIMEE---
                                                                                                                                                                                                                                                                                                                                                 ISTVREARENKI PYLGICLGMQSAVIBEARNVVGLEGAHSTEELPKSPHPVIGLITEMMD
                                                                                                                                                                                                                                                                                                                                                                                                                                                              EFSYEVPLKLKEQGIDRIITERLNLEHREVNLGKWKKIVNVLRNPBEEVNVALVGKYVEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAGELKTKPTQHSVKELRAIGIQPDMIICRADRELPKGIKSKIALFTNVKEEAVISAPDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Cip
 6.3.4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                              543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          synthase
 .
2)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  58.8%; Score 1639; DB 2; 56.9%; Pred. No. 1.4e-97;
 Bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    94;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NID:g2983749;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sequence not
 subtilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches 128;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                £. ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Young, W.G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PIDN: AAC07314.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       shown;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         translation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Lenox,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Aquifex
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PID:g2983754; GB:AE000657
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A.L.; Graham,
```

360

300

420 358 300

240 240 180

120 120 60

480 415

468

밁 S 문 Ś 문 Ş 망 Ş

8

문

Ś В ð 유

유 &

```
A; Residues: 1-535 < GLAS
A; Residues: 1-535 < GLAS
A; Cross-references: EMEL: 249782; NID: g853752; PIDN: CAA89870.1; PID: g853762
R; Kunst, F.; Ogasawara, N.; Moszer, I.; Albertini, A.M.; Alloni, G.; Azevedo, V.; Berter
C.; Brop, S.; Brouillet, S.; Bruschi, C.V.; Caldwell, B.; Capuano, V.; Carter, N.M.; Chd
A.; Ehrlich, S.D.; Emmerson, P.T.; Ehrian, K.D.; Errington, J.; Fabret, C.; Ferrari, E.
Nature 390, 249-256, 1997
A; Authors: Foulger, D.; Fritz, C.; Fujita, M.; Fujita, Y.; Fuma, S.; Galizzi, A.; Galler
iech, J.; Harwood, C.R.; Henaut, A.; Hilbert, H.; Holsappel, S.; Hosono, S.; Hullo, M.F.
Koetter, P.; Koningstein, G.; Krogh, S.; Kumano, M.; Kurita, K.; Lapidus, A.; Lardinois,
K.; Authors: Lauber, J.; Lazarevic, V.; Lee, S.M.; Levine, A.; Liu, H.; Masuda, S.; Maueel
Y, M.; Ogawa, K.; Ogiwara, A.; Oudega, B.; Park, S.H.; Parro, V.; Pohl, T.M.; Portetelle
Rieger, M.; Rivolta, C.; Rocha, E.; Roche, B.; Rose, M.; Sadaie, Y.; Sato, T.; Scanlon,
A; Authors: Schleich, S.; Schroeter, R.; Scoffone, F.; Sekiguchi, J.; Sekowska, A.; Seror
akeuchi, M.; Tamakoshi, A.; Tanaka, T.; Terpstra, F.; Tognoni, A.; Tosato, V.; Uchiyama,
T.; Winters, P.; Wipat, A.; Yamamoto, H.; Yamane, K.; Yasumoto, K.; Yata, K.; Yoshida, K.
A; Title: The complete genome sequence of the Gram-postive bacterium Bacillus subtilis.
A; Reference number: A69580; MUID: 98044033; PMID: 9384377
A; Accession: C69610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        N,Alternate names: CTP-synthetase; UTP-ammonia ligase ()Species: Bacillus subbilis C;Date: 30-Jun-1992 #sequence revision 30-Jun-1992 #text_change 16-Jun-2000 C;Accession: A32354; S55423; C69610 R;Trach, K.; Chapman, J.W.; Piggot, P.; LeCoq, D.; Hoch, J.A. J. Bacteriol: 170, 4194-4208, 1988 J. Bacteriol: 170, 4194-4208, 1988 A;Title: Complete sequence and transcriptional analysis of the spo0F region of the Bacil A;Reference number: A91883; MUID:88314920; PMID:2457578 A;Accession: A32354 A;Accession: A32354
                                                            Ş
                                                                                                                                   В
                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Gene: ctrA; pyrG
A;Map position: 37 min
C;Superfamily: CTP synthase
C;Keywords: ligase; pyrimidine nucleotide biosynthesis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    R;Glaser, P.; Danchin, A.
submitted to the EMBL Data Library, May 1995
A;Description: Cloning and sequencing of the Bacillus subtilis chromosomal region from A;Reference number: S55414
A;Accession: S55423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Molecule type: DNA
A;Residues: 1-535 <KUN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local S
Matches 310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ;Cross-references: GB:Z99123; GB:AL009126; NID:g2636240; PIDN:CAB15743.1; PID:g2636252;Experimental source: strain 168;Comment: This enzyme is a glutamine amidotransferase that catalyzes the terminal react
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ;Molecule type: DNA
;Residues: 1-535 <TRA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Status: nucleic acid sequence not shown; translation not shown
241
                                                                                                                                       181
                                                                                                                                                                                                               179
                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             310;
                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                            EIKRRVYESAB--GKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPY 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
DADNLYSIPLELQKQGLDKLVCEHMKLACKEAEMSEWKELVNKVSNLSQTITIGLVGKYV 300
                                                                                                                                                                                        IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI 238
                                                                                                                                                                                                                                                                                                                                                                                                                          VTDDGÅETDLDLGHYERFIDINLNKFSNVTTGKIYSTVLKKERRGDYLGGTVQVIPHITN 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MTKY1FVTGGVVSSLGKG1VAASLGRLLKNRGLNVT1QKFDPY1NVDPGTMSPYQHGEVF
                                                                   DADTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV 298
                                                                                                                                   IKAAGELKTKPTOHSVKELRSLGIOPNIIVVRTEMPISQDMXDKIALFCDIDTKAVIECE 240
                                                                                                                                                                                                                                                                                   ELKORVYRAGKETNADVVITEIGGTVGDIESLPFLEAIROMKSDIGRENVMYIHCTLVPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        58.2%; Score 1622.5; DB 1; Length 535; 57.0%; Pred. No. 1.7e-96;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          94:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             127;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                   180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60
```

g	Ş	Вþ	Ş	Вb	Ş	₽	Ş	문	Ą
531	538	471	478	421	418	361	358	301	299
531 AANO 534	538 HKTQ 541	471 QQMEEQGFVFSGTSPDGRLVEIIELKDHPWFVASQFHPEFKSRPTRPQPLFKGFTGASVE 530	478 KQLEAAGMKESGKSLDGRLVEIIBLPEHPWELACQFHPEFTSTPRNGHALFSGFVEAAAK 537	421 QKDVEDIAGTIRIGIYPCKLEEGTKAFEVYQDEVVYERHRHRYEFNNEFR 470	418 WYDDEAGELVTRDEDSDLGGTWRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYL 477	361 EGKIVATKYARENNIPPLGICLGMQVASIEYARNVLGLKGAHSAEIDPSTQYPIIDLLPE 420	358 EGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITE 417	301 ELPDAYISVVESLRHAGYAFDTDVKVKWINAEEVTENNIAELTSGTDGIIVPGGFGDRGV 360	299 DHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIBAEGTAKL-KNVDAILVPGGPGERGV 357
		30	37	70	77	20	17	60	57

Search completed: January 29, 2004, 15:55:33 Job time: 17.0063 secs

4

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Minimum
Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Total number
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence:
     97.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                      1908.5
1905
1892.5
1888.5
1882.5
1737
1729.5
1685.5
1685.5
1662.5
   1639
1622.5
1615.5
1600.5
1600.5
1595
1595
1596
1583.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score
                                                                                                                                                                                                                                                                                                                                                                                                                                 1937
1931
1925
1924
1918
1918
                                                                                                                                                                                                                                                                                                                                                                                                                1909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-941-947A-16
2788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     January 29, 2004, 15:41:08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               127863 seqs, 47026705 residues
     SwissProt_41:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MTKF1F1TGGVVSSLGKGIA...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                         \begin{array}{c} 5.542 \\ 5.542 \\ 5.544 \\ 5.544 \\ 5.544 \\ 5.544 \\ 5.544 \\ 5.544 \\ 5.544 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\ 5.545 \\
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GenCore version 5.1.6 (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gapext 0.5
PYRG PSEAE
PYRG NITEU
PYRG SALITY
PYRG XANCP
PYRG YANAC
PYRG YANAC
PYRG YERPE
PYRG PASMU
PYRG ECOLI
PYRG ECOLI
PYRG NEIMB
PYRG NEIMB
PYRG NEIMB
PYRG NEIMB
PYRG BUCAP
PYRG BUCAP
PYRG BUCAP
PYRG BUCAP
PYRG THEIN
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG LISIN
PYRG LISIN
PYRG LISIN
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CLOAB
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG CRAME
PYRG SANPP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; Search time 10.244 Seconds (without alignments) 2497.314 Million cell updates
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         . HALFSGFVEAAAKHKTQGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           127863
   Q8d2k0
Q9k6d7
Q8r720
067353
P13242
Q97f61
P74261
P7495
Q927t4
Q8y495
Q9a7k3
Q9a7k3
Q9a7k3
Q9a7k3
                                                                                                                                                                                                                                                             P08398
Q8zbn1
P44341
Q9pdu1
Q9jtk1
Q9jyj8
Q9jyj8
Q8y0b8
P57491
P59039
P59039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q8xen5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cell updates/sec
                                                    buchnera ap
buchnera ap
buchnera ap
buchnera ap
buchnera ap
buggleswort
bacillus ha
bacillus ae
bacillus su
clostridium
synechocyst
listeria in
listeria in
listeria me
caulobacter
brucella me
                                                                                                                                                                                                                                                                                                                1 yersinia pe
1 haemophilus
1 xylella fas
1 neisseria m
8 neisseria m
7 ralstonia s
                                                                                                                                                                                                                                                                                                                                                                                                                            6 xanthomonas
9 vibrio para
3 xanthomonas
3 vibrio vuln
4 vibrio chol
9 pasteurella
9 pasteurella
                   rhizobium m
clostridium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             nitrosomona
salmonella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               pseudomonas
nitrosomona
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         544
```

Complete proteome.

EMBL; AB004783; AAG07025.1; -.
PIR; B83192; B83192.
HAMAP; MF 01227; -; 1.
InterPro; IPR000991; GATase 1.
InterPro; IPR004468; PyrG.
Pfam; PF00117; GATase; 1.
PIGRPAMS; TIGR00337; PyrG; 1.
PROSITE; PS00442; GATASE TYPE I; 1.
PYrinidine biosynthesis; Ligase; Glutamine amidotransferase;

888888888	22222222222222222222222222222222222222	A F F F F B R R R R R R R R R R R R R R R	지 및 R S S S S S S S S S S S S S S S S S S
-!- SIMILARII -!- SIMILARII -!- SIMILARII -!- SIMILARII This SWISS-pp between the Buropean use by non- modified and entities requestration or send an en	Garber R.L. Brody L.L., Smith K.A., Smith K.A., Reizer J., "Complete gopportuniss Nature 406 -i- FUNCTILINE Simila -i- CATALY -i- ENZYME -is the -i- SUBUNIT	Q9HXZ4; 28-FEB-2003 (Rel. 28-FEB-2003 (Rel. 28-FEB-2003 (Rel. 28-FEB-2003 (Rel. CTP synthase (EC 6) PYRG OR PA3637 Pseudomonas aerugi Bacteria; proteoba Pseudomonadaceae; NCBI_TaxID=287; [1] SEQUENUE FROM N.A. STRAIN=ATCC 15692 MEDLING=20437337; Stover C.K., Pham Hickey M.J., Brink	34 1576 56.5 536 35 1574.5 56.5 540 36 1563.5 56.1 540 37 1562 56.0 535 39 1555.5 56.0 542 40 1552.5 55.8 537 40 1552.5 55.7 535 41 1552.5 55.3 537 42 1542 55.3 537 44 1538.5 55.2 537 44 1538.5 55.2 537 45 1507 54.1 543 RESULT 1 RESULT 1 PYRG PERAR STANDARD
the CTP synthase family type-1 glutamine amidot oppyright. It is produced ite of Bioinformatics and its institute. There are it it is not removed. Usage se agreement (See http://se@isb-sib.ch).	plentino E., Westbrock- Folger K.R., Kas A., I. Wong G.KS., Wu Z., F Monck R.E.W., Lory S., of Pseudomonas aerugin he ATP-dependent aminat ammonia as the source pr + UTP + NH(3) = ADP losterically activated bited by CTP (By simil iosynthesis; conversion	ated) t sequence update) t annotation update) (UTPammonia ligase) Gammaproteobacteria; onas. 10984043; Erwin A.L., Mizoguch L., Hufnagle W.O., Ko	536 1 PYRG_STAAM 545 1 PYRG_ANASP 540 1 PYRG_ANASP 535 1 PYRG_STRPN 535 1 PYRG_AGRT5 537 1 PYRG_PYRAB 542 1 PYRG_PYRAB 537 1 PYRG_PYRU 537 1 PYRG_PYRU 537 1 PYRG_PYRU 537 1 PYRG_PYRHO 537 1 PYRG_PYRHO 537 1 PYRG_PYRHO 537 1 PYRG_CAMJE 537 1 PYRG_CAMJE 537 1 PYRG_CAMJE 537 1 PYRG_CAMJE
through a collaboration through a collaboration d the EMBL outstation or restrictions on its content is in no way by and for commercial www.isb-sib.ch/announce/	Lim R.M., T., an to CTP wi en (By te + CTP. hen glutami o CTP; thir	hetase) dales; rrener	Q99sd1 staphylococ Q8ymd4 anabaena sp Q58574 methanococc Q97893 streptococc Q97893 streptococcus 298mf0 rhizobacteri Q9v182 pyrococcus Q8mf0 rhizobium 1 Q8tyt7 methanopyru P28595 azospirillu Q8tzy6 pyrococcus Q59456 pyrococcus Q59j84 campylobact

```
PYRG NITEU
ID PYRG N
AC 085347
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
ON NITOS
ON NITOS
ON NITOS
ON NITOS
ON NITOS
ON NITOS
ON STRAIN
RA CHAIN
RA ALCIAET
RT "Compl
RT Obliga
RT J Bac
RM [2]
>
RP SEQUEN
                                                                                                                                                                                                                                                                                                                                             Ŋ.
                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                 몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEFFES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
Matches 383
                                                                                                                                                                                     28-FEB-2003 (Rel. 41
15-SEP-2003 (Rel. 42
15-SEP-2003 (Rel. 42
CTP synthase (EC 6.3
                 SEQUENCE FROM N.A.

STRAIN-ATCC 19718 / IFO 14298;

STRAIN-ATCC 19718 /, PubMed=12700255;

MEDLINE=22586410; PubMed=12700255;

Chain P., Lamerdin J.E., Larimer F.W., Regala W., Lao V., Land Hauser L., Hooper A.B., Klotz M.G., Norton J., Sayavedra-Soto Arciero D.M., Hommes N.G., Whittaker M.M., Arp D.J.;

"Complete genome sequence of the ammonia-oxidizing bacterium a obligate chemolithoautotroph Nitrosomonas europaea.";

J. Bacteriol. 185:2759-2773(2003).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
                                                                                                                                         Bacteria; Proteobacteria; Betapr
Nitrosomonadaceae; Nitrosomonas
  SEQUENCE
                                                                                                                                                                Nitrosomonas europaea
                                                                                                                                                                                                                                 PYRG NITEU O85347;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE
                                                                                                                                NCBI_TaxID=915;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DOMAIN
                                                                                                                                                                            OR NE1045
                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                      183
                                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                            361
                                                                                                                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   383;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                              EAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKH
                                                                                                                                                                                                                                                                                                                                           ATGATEIRTEASDLGGTMRLGAQECQLQTGTLVHDCYAKDVIVERHRHRYEVNNNLLPQL
                                                                                                                                                                                                                                                                                                                                                           EAGELVTROEDSDLGGTWRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEENNQYLKQL
                                                                                                                                                                                                                                                                                                                                                                                       ISTVQYARENKIPYLGICLGMQVAVIEYARNVLGWSDANSTEFDXSSGHPVVGLITEWQD
                                                                                                                                                                                                                                                                                                                                                                                                                                 LDAYKSLIBAWTHAGIQSRTKVNLRYIDSBDIBQQGTSLLBGVDAILVPGGFGLRGVEGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DTIYRIPSVLHAQGLDDIVVERFGLECGQADLSEWDRVVDAKLNPEREVTIAMVGKYMEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                 EQAGLKISGRSGDGALVEVVEAPEHPWFVACQFHPEFTSTPRDGHPLFSGFVNAALKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                      TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGEGERGVEGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DTIYRIPLLLREQGLDDLVVDQLRLDVFAADLSAWBKVVDGLTHPTDEVSIAIVGKYVDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TAGETKTKPTQHSVKELRSIGLQPDVLVCRSDHPIDVSSRRKIALFTNVBERAVIALEDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VTQDGABTDLDLGHYERFVRTTMTQNNNFTTGRVYMDVLRKERRGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MTRYIFVTGGVVSSLGKGIASASLAAILEARGLKITMLKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                    ISTVRFARENKIPYLGICLGMQSAVIBFARNVVGLEGAHSTEFLPKSPHPVIGLITEMMD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VTEDGAETDLDLGHYERFLKTIMTKKNNFTTGQVYBQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1
300
378
514
516
  41-564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3
                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                   41, Created)
42, Last sequence update)
42, Last annotation update)
42, Last annotation ligase)
6.3.4.2} (UTP--ammonia ligase)
  FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         542
378
514
516
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              72.0%;
71.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3
                                                                                                                                                      Betaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AMINATOR DOMAIN.
GLUTAMINE ANIDOTRANSFERASE.
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 2008;
Pred. No. 1.
                                                                                                                                                                                                                                             PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6CE2510EC26BC2B0 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                             564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .8e-13
                                                                                                                                                                                                                                            Ã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 1; Length
                                                                                                                                                                                       (CTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                      synthetase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
                                                                             3
                                                                                                                                                                                                                                                                                                   538
                                                                                                                                                                                                                                                                                                                      538
                                                                                                                                                                                                                                                                                                                                                                                                                                                       360
                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                  360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60
                                                                                                                                                                                                                                                                                                                                  Ś
                       밁
                                       ð
                                                                Ď,
                                                                                      Ś
                                                                                                        문
                                                                                                                              ð
                                                                                                                                                      밁
                                                                                                                                                                        S
                                                                                                                                                                                                  밁
                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                               á
                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                 Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                 ACT_SITE
ACT_SITE
ACT_SITE
CONFLICT
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -
                                                                                                                                                                                                                                                                                                                                                                                                  DOMAIN
                                             301
                                                                   241
                                                                                                            181
                                                                                                                                  181
                                                                                                                                                       121
                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                        368;
                                                                                                                                                                                                   61
                                                                                                                                                                                                                        61
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL; BX321859; CAD84956.1; -.
EMBL; AF061753; AAC33441.1; -.
HAMAP; MP 01227; ; 1
InterPro; IPR000991; GATase 1.
InterPro; IPR004468; PyrG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TIGREAMS; TIGRO0337; PyrG; 1.
PROSITE; PS00442; GATASE TYPE I; 1.
Pyrimidine blosynthesis; Ligase; Glutamine amidotransferase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pfam; PF00117; GATase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -!- FUNCTION: Catalyzes the ATP-dependent amination either L-glutamine or ammonia as the source of r
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Wahony T.J., Miller D.J.;
"Linkage of gemes encoding enclase (enc) and CTP strikage of semes encoding enclase (enc) and CTP strikage of gemes encoding enclase (enc) and CTP strikage of the beta-subdivision proteobacterium Nitrosomonas FEMS Microbiol. Lett. 165:153-157(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRAIN=ATCC 19718 / IFO 14298;
MEDLINE=98377731; PubMed=9711852;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               similarity).

CATALYTIC ACTIVITY: ATP + UTP + NH(3) = ADP + phosphate + CTP.

ENZYME REGULATION: Allosterically activated by GTP, when glutamine is the substrate. Inhibited by CTP (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (last) step.
SUBUNIT: Homotetramer (By similarity).
SIMILARITY: Belongs to the CTP synthase family.
SIMILARITY: Contains 1 type-1 glutamine amidotransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PATHWAY: Pyrimidine biosynthesis; conversion of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                 SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VTEDGAETDLDLGHYERFLKITMTKKNNFTTGQVYBQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDFYINVDFGTWSFFQHGEVF
                                                                                             TDAYKSLNEALIHAGIHTRHKVQISYIDSETIBAEGTAKLKVVDAILVPGGFGERGVEGK
                                                                                                                                                                                                                                                                                                                                                                                             EIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WTKFVFVTGGVVSSLGKGIAAASLAALLETRGIRVTILKLDPYINVDPGTMNPFQHGEVF
ISTVRFARENKIPYLGICLGMQSAVIBFARNVVGLBGAHSTEFLPKSPHPVIGLITEWMD
                                                 TESYKSLSEALIHAGIHTRCKINIHYIDSENIEQHGTGCLTNMDAILVPGGFGKRGVEGK
                                                                                                                                                                                                                                                    SAGELKTKPTOHSVKELREIGIOPDVLLCRSDRPLPLBERRKIALFTNVREBSVISAIDV
                                                                                                                                                                                                                                                                                                                                                      EIKLFIRNGVSDAQVAIVEIGGTVGDIESLPFLEAIRQMSVQLPHHDTCFIHLTLLPYIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                            LDLGHYBRFISTKMTRQNNFTTGQIYBSVIRKERRGDYLGGTVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  518
105
464
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               69.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         63079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ₩
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AMINATOR DOMAIN.

GLUTAMINE AMIDOTRANSFERASE.
GATASE (BY SIMILARITY).
G -> A (IN REF. 2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 1948;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5A432CF6D4DC2D58 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; DB 1;
L.le-114;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTP synthase (pyrG)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    nitrogen (B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    europaea.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            UMP to CTP; third
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  with
                                                                                                                                                                                                        300
                                                                                                                                                                                                                                                                                                                                                               180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                  360
                                                                                                                                                      300
                                                                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60
```

ક

361 421

EAGELVTRDEDSDLGGTWRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQL

420

```
PYRG SALITY
ID PYRG S
AC QARENS
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
RX MEDLIN
RA Leonax
RA Ryan E
RA Krogh
RA Whitel
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA Groni
RA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SPECIES-S.typhi; STRAIN-CT18;

MEDLINE-21534947; PubMed=11677608;

Mercher C., Mungall K.L., Bentley S.D., Holden M.T.G., Sebaihia M.,

Churcher C., Mungall K.L., Bentley S.D., Holden M.T.G., Sebaihia M.,

Baker S., Basham D., Brooks K., Chillingworth T., Connerton P.,

Baker S., Basham D., Bavies R.M., Dowd L., White N., Farrar J.,

Cronin A., Davis P., Davies R.M., Dowd L., White N., Farrar J.,

Peltwell T., Hamlin N., Haque A., Hien T.T., Holroyd S., Jagels K.,

Krogh A., Larsen T.S., Leather S., Moule S., O'Gaora P., Parry C.,

Quail M., Rutherford K., Simmonds M., Skelton J., Stevens K.,

Whitehead S., Barrell B.G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SHECIES=S.typhimurium; STRAIN=LT2 / SGSC1412 / ATCC 700720; MEDLINE=21534948; PubMed=11677609; McClelland M., Sanderson K.E., Spieth J., Clifton S.W., Latre Courtney L., Porwollik S., Ali J., Dante M., Du F., Hou S., L. Leonard S., Nguyen C., Scott K., Holmes A., Grewal N., Mulvan Ryan S., Sun H., Florea L., Miller W., Stoneking T., Nhan M., Waterston R., Wilson R.K.;
                                                                                                                                                                                                                                                                                                                                                                                                 SPECIES=S.typhi; STRAIN=Ty2 / ATCC 700931; MEDLINE=22531367; PubMed=12644504; Deng W., Liou S.-R., Plunkett G. III, Mayhew G.F., Rose D.J., Burland V., Kodoyianni V., Schwartz D.C., Blattner F.R.; "Comparative genomics of Salmonella enterica serovar Typhi strains and Cris "."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QBXENS;
28-FEB-2003 (Rel. 41, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
CTP synthase (EC 6.3.4.2) (UTP--ammonia ligase)
PYRG OR STM2953 OR STT93082 OR T2854.
Salmonella typhimurium, and
Salmonella typhim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Complete genome sequence of a multiple
enterica serovar Typhi CT18.";
Nature 413:848-852(2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nature 413:852-856(2001).
[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacteria; Proteobacteria; Gammaproteobacteria;
Enterobacteriaceae; Salmonella.
MCBI_TaxID=602, 601;
                                                                                                                                                                                                                                                                                                                                                                                "Comparative and CT18.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                Bacteriol. 185:2330-2337(2003).
- FUNCTION: Catalyzes the ATP-dependent amination either L-glutamine or ammonia as the source of r
                                                                                                                          similarity).

CATALYTIC ACTIVITY: ATP + UTP + NH(3) = ADP + phosphate + ENZYME REGULATION: Allosterically activated by GTP, when g is the substrate. Inhibited by CTP (By similarity).

PATHWAY: Pyrimidine biosynthesis; conversion of UMP to CTP
   SUBUNIT: Homotetramer (By similarity).
SIMILARITY: Belongs to the CTP synthas
SIMILARITY: Contains 1 type-1 glutamin
                                                                                                (last) step.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SALTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RCGRVEKRSAQTDLGGTMRLGGQECLLKPHTLAHKIYGADKVIERHRHRYEVNAEFIPQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EAAGMKFSGKSLDGRLVEIIELP--EHPWFLACQFHPEFTSTPRNGHALFSGFVEAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EQAGMHISGLSAEGDLCEMIELPQSEHPWFVACQFHPEFTSTPRNGHPLFKSYIQAA 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            genome sequence of Salmonella enterica serovar Typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 N.A.
   'P synthase
glutamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               grug
         amidotransferase
                                    family
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  resistant Salmonella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (CTP
                                                                                                                                                                                                                                                                                          nitrogen
                                                                                                                                                                                                                                                                                       of UTP to CTP
nitrogen (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 synthetase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mulvaney
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Latreille F
S., Layman
                                                                                                                                                                                             glutamine
                                                                                                                                                                                                                                 CIP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3 P.,
                                                                                                                                                                                                                                                                                                                                                                                                                  갓
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 480
```

```
S
                                                                                       片
                                                                                                                          Ś
                                                                                                                                                                                 ğ
                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                              닭
                                                                                                                                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     皮
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            먕
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SATE TO THE TENT OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPER
믕
                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               몺
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMEL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; AE008835; AAL721833.1; -.
EMBL; AL627276; CAD06059.1; -.
EMBL; AE016843; AA070411.1; -.
StyGene; SG?????; pyrG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PROSITE; PS00442; GATASE_TYPE_I; 1.
PVTImidine biosynthesis; Ligase; Glutamine amidotransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HAMAP; MF_01227; -; 1.
InterPro; IPR000991; GATase_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro;
                                                                                          422
                                                                                                                                       422
                                                                                                                                                                                                                                 362
                                                                                                                                                                                                                                                                                 302
                                                                                                                                                                                                                                                                                                                              302
                                                                                                                                                                                                                                                                                                                                                                           242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               122
  482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     367; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ν
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N
                                                                                                                                                                                 TIYRIPLLLERQGLDDLVVDQLRLDVPAADLSAWBKVVDGLTHPTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPPQHGEVFV
AAGLRVAGRSGDDQLVEIIEVPNHEWEVACQFHPEFTSTFRDGHPLFAGFVKAANEHQ
                              AAGMKFSGKSLDGRLVBIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHK 539
                                                                                       DGNVEVRSEKSDLGGTMRLGAQQCQLSDDSLVRQLYGASTIVBRHRHRYEVNNMLLKQIB
                                                                                                                   AGELVTRDEDSDLGGTMRLGAQKCRLKADSLAPQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                              DAYKSVIBALKHGGLKNRVTVNIKLIDSQDVBTRGVEILKDLDAILIPGGFGYRGVEGKI
                                                                                                                                                                                                                                                                                                                              DAYKSLNEAL IHAGIHTRHKVQISYIDSETIBABGTAKLKNVDAILVPGGFGBRGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IKRRVYEGAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TEDGAETDLDLGHYERFIRTKMSRRNNFTTGRIYSDVLRKERRGDYLGATVQVIPHITNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TEDGAETDLICHYERFLKTIWIKKONFTIGQVYBQVLRNERKGDYLGATVQVIFHITDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TNYI FYTGGVVSSIGRGIAAASLAAILEARGLNYTIMKLDPYINVDPGTMSDIQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             300
378
514
516
544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GATase; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        299
544
378
514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  59990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            68.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BY SIMILARITY.
AMIMATOR DOMAIN.
GAUTAMINE AMIDOTRANSFERASE.
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 1946;
Pred. No. 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    E4BCA885F342EAB8 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .4e-114;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       544;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                            481
                                                                                                                                                                                         421
                                                                                                                                                                                                                                      421
                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
```

```
RESULT 4

PYRG XANCP

ID PYRG XANCP STANDARD; PRT; 554 AA.

AC Q8P9Z6;

DT 28-FEB-2003 (Rel. 41, Created)
```

```
RA Quaggio R.B., Monteiro-Vitorello C.B., Van Sluys M.A., Almeida N.F., RA Alves L.M.C., do Amaral A.M., Bertolini M.C., Camargo L.B.A., RA Alves L.M.C., do Amaral A.M., Bertolini M.C., Camargo L.B.A., RA Cicararelli R.M.B., Coutinho L.L., Chambergo F., Ciapina L.P., RA Cicarelli R.M.B., Coutinho L.L., Cursino-Santos J.R., B1-Dorry H., RA Faria J.B., Ferreira A.J.S., Ferreira R.C.C., Ferro M.I.T., RA Formighieri E.F., Franco M.C., Greggio C.C., Gruber A., RA Cicaryama A.M., Kishi L.T., Leite R.P., Lemos E.G.M., Lemos M.V.F., RA Locali E.C., Machado M.A., Madeira A.M.B.N., Martinez-Rossi N.M., RA Martins E.C., Meidanis J., Menok C.F.M., Miyaki C.Y., Moon D.H., RA Moreira L.M., Novo M.T.M., Okura V.K., Oliveira M.C., Oliveira V.R., Pereira H.A., Rossi A., Sena J.A.D., Silva C., de Souza R.F., RA Spinola L.A.F., Takita M.A., Tamura R.E., Teixeira B.C., Tezza R.I.D., RA Setubal J.C., Kitajima J.F.;
RT "Comparison of the genomes of two Xanthomonas pathogens with differing RI Narive A17.45 (10.70)
                                                                                                                         Query Match
Best Local S
Matches 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTP synthase (EC 6.3.4.2 PyRG OR XCC1697. Xanthomorro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Nature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN-ATCC 33913 / NCPPB 528;
MEDLINE-22022145; PubMed=12024217;
da Silva A.C.R., Ferro J.A., Reinach F.C
Quaggio R.B., Monteiro-Vitorello C.B., V
Quaggio R.B., Montain A.M., Bertolini
Camazzotta G., do Amazzal A.M., Bertolini
                                                                                                                                                                                                                                                      DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bacteria; Proteobacteria; Xanthomonadaceae; Xanthomon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN the European Bioinformatics Institute. There are no restruct by non-profit institutions as long as its content modified and this statement is not removed. Usage by ancentities requires a license agreement (See http://www.isb-sentities.com/profit institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions/specific institutions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Xanthomonas campestris (pv. campestris).
Bacteria; Proteobacteria; Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL; AE012271; AAM40991.1; ALT_INIT. HAMAL; MF 01227; -; I.
InterPro; IPR000991; GATase_1.
InterPro; IPR004468; PyrG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pyrimidine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PROSITE; PS00442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SUBUNIT: Homotetramer (By similarity). SIMILARITY: Belongs to the CTP synthase SIMILARITY: Contains 1 type-1 glutamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CATALYTIC ACTIVITY: ATP + UTP + NH(3) = ADP + phosph ENZYME REGULATION: Allosterically activated by GTP, is the substrate. Inhibited by CTP (By similarity). PATHWAY: Pyrimidine biosynthesis; conversion of UMP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          either L-glutamine or ammonia similarity).
CATALYTIC ACTIVITY: ATP + UTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FUNCTION: Catalyzes the ATP-dependent amination
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (last) step
                                                                                                                             367; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PF00117; GATase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                     proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FROM
                                                       MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0117; GAIGAC,
TIGR00337; PYTG; 1
PS00442; GATASE TYPE I;
PS00442; GATASE TYPE I;
MTPLIFVTGGVVSSLGKGIAAASLASILEARGLKVTYMKLDPYINVDPGTMSPPQHGEVY
                                                                                                                                                                                                                                                   302
380
518
520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              z
                                                                                                                                                                                                                                                          AA;
                                                                                                                                                                                                                              301
554
380
518
520
61514 N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Last sequence update)
Last annotation update)
4.2) (UTP--ammonia ligase)
                                                                                                                                                            67
                                                                                                                                                        2.5
                                                                                                                                                                                                                                                          Æ,
                                                                                                                      80;
                                                                                                                                                                                                                                                                               AMINATOR DOMAIN.
GLUTAMINE AMIDOTRANSFERASE.
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
                                                                                                                  Pred. No. 4.40); Mismatches
                                                                                                                                                                                        Score
                                                                                                                                                                                                                                                          A2D70CA2D8DF1AE0 CRC64;

    Glutamine amidotransferase;

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                as the
                                                                                                                                                                                    1938;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 noved. Usage by and for (See http://www.isb-sib
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   source
                                                                                                                                                            4e-114;
                                                                                                                                                                                        B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   amidotransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  family.
                                                                                                                                                                                        1;
                                                                                                                             95;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Xanthomonadales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           + phosphate + by GTP, when ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (CTP synthetase)
                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                nitrogen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of UTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  restrictions
                                                                                                                                                                                           554;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           when glutamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTP; third
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             for
                                                                                                                             4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTP with
                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
60
                                                              60
```

\$\frac{2}{2}\frac{2}\frac{2}\frac{2}{2}\frac{2}\frac{2}{2}\frac{2}{2}\frac{2}{2}\frac{2}{2}\frac{2}{2}\frac{2}

, B 8

```
PARGUIPA
ID PYRG V
PYRG V
PYRG V
PYRG V
PYRG V
PYRG V
PYRG V
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG S
PYRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             멅
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ő
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     음 성
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              몺
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         몂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PYRG VIBPA
Q87LP9;
15-SEP-2003 (F
15-SEP-2003 (F
15-SEP-2003 (F
CTP synthase
                                                                                                                                                                                                                                                                                                      Makino K., Oshima K., Kurokawa K., Yokoyama K., Uda T., Ta
Iijima Y., Najima M., Nakano M., Yamashita A., Kubota Y.,
Yasumaga T., Honda T., Shinagawa H., Hattori K., Iida T.;
"Genome sequence of Vibrio parahaemolyticus: a pathogenic
distinct from that of V. cholerae.";
Lancet 361.743-749(2003).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
STRAIN=RIMD 2210633 / Serotype 03:
MEDLINE=22508454; PubMed=12620739;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacteria; Proteobacteria; Vibrionaceae; Vibrio.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Vibrio parahaemolyticus
                   SUBUNIT: Homotetramer (By similarity).
SIMILARITY: Belongs to the CTP synthase family.
SIMILARITY: Contains 1 type-1 glutamine amidotransferase domain.
                                                                                                                                                     CATALYTIC ACTIVITY: ATP + UTP + NH(3) = ADP + phose ENZYME REGULATION: Allosterically activated by GTI is the substrate. Inhibited by CTP (By similarity)
                                                                                                                                                                                                                                                               FUNCTION: Catalyzes the ATP-dependent amination either L-glutamine or ammonia as the source of r
                                                                                                                                     PATHWAY:
                                                                                                                                                                                                                                         similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                      last) step.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISALDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QLEDAGLVICGKSMDDTLVEMVELPRDTHPWFLACQAHPEFLSTPRDGHPLFIGFVRAAR 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GKISTVRFARENKIPYLGICLGMQSAVIBFARNVVGLEGAHSTEFLFKSPHPVIGLITEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DVLYGMPLELRRQGLDELVIDQFKLRDKVAAADLSEMEAVVDAVKHPLDEVTIAVVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EIRRCIDEATAGFDVALIEIGGTVGDIESLPFLEAIRQVRTERGAEKAMFMHLTLVPYIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIFHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EKKAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QLEAAGMXESGKSLDGRLVBIIBLPB--HPWFLACQFHPEFTSTPRNGHALFSGFVBAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RTATGEVEKRDEKSDLGGTWRLGLQEQRLKPGTLAREVIGKDVVAERHRHRYEFNNRYRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DHQDAYKSVAEALKHGGLRQRTKVNLTWLEAQDLEGSDMAALQGIDGILVPGGFGDRGFE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DTIYRIPLLLREQGLODLVVDQLRL--DVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAGELKTKPTQHSVKELRSIGIQPDVLLCRSEQAVPDSERRKIALFTNVSERAVISCPDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VTDDGAETDLDLGHYERYVRTRLSRKNSVTTGRIYENVIRKERRGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KHKTQG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GKVQTSKYAREHKVPYFGICYGMQAAVVDYARHVADLDAANSTENDRQSPHPVIGLITEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3 (Rel. 42, Create
3 (Rel. 42, Last s
3 (Rel. 42, Last s
se (EC 6.3.4.2) (U
                                                                                                                               Pyrimidine biosynthesis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (UTP--ammonia ligase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gammaproteobacteria; Vibrionales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                03:K6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                546
                                                                                                                                     conversion
                                                                                                                                                                                    + phosphate +
by GTP, when s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (CTP synthetase).
                                                                                                                                     ě
                                                                                                                                                                                                                                                               nitrogen
                                                                                                                                     d
MD
                                                                                                                                                                                                                                                                                              of UTP to
                                                                                                                                                                                                                                                                                                                                                                                                                        Tagomori
.., Kimura
                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                           mechanism
                                                                                                                                     CTP; third
                                                                                                                                                                                                                                                                     βy
                                                                                                                                                                                    glutamine
                                                                                                                                                                                                                                                                                              CTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 420
```

```
PYRG XANAC
ID PYRG X
AC Q8FL53
AC Q8FL53
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
CTP 9XRG C
QN PYRG C
QN PYRG C
QN SAnthol
CC Bacter
CC Xanthol
                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                  문
                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                 몽
                                                                                                                                                                                                                                                                                                                              $
                                                                                                                                                                                                                                                                                                                                                             문
                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                   맑
                                                                                                                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   뮍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STATEMENTORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          뮍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local S
Matches 366
                                                                  Q8PLS3;
28-FEB-2003
28-FEB-2003
28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
SEQUENCE
PYRG OR XAC1716

Xanthomonas axonopodis (pv. Bacteria; Proteobacteria; Garanthomonadaceae; Xanthomona
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PROSITE; PR
Pyrimidine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Complete
                                       -FEB-2003 (Rel. 41, Create
-FEB-2003 (Rel. 41, Last s
-FEB-2003 (Rel. 41, Last a
F synthase (EC 6.3.4.2) (URG OR XAC1716.
                                                                                                                        XANAC
                                                                                                                                                                                             483
                                                                                                                                                                                                                       482
                                                                                                                                                                                                                                                   423
                                                                                                                                                                                                                                                                            422
                                                                                                                                                                                                                                                                                                        363
                                                                                                                                                                                                                                                                                                                                 362
                                                                                                                                                                                                                                                                                                                                                             303
                                                                                                                                                                                                                                                                                                                                                                                       302
                                                                                                                                                                                                                                                                                                                                                                                                                   243
                                                                                                                                                                                                                                                                                                                                                                                                                                              242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AP005082; BAC60825.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                       AAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKH
                                                                                                                                                                                                                                                TGNVEERTESSDLGGTWRLGSQLCHLEKGTKARELYGSATTHERHRYEVNNVLRPQIE
                                                                                                                                                                                                                                                                        AGELVTRDEDSDLGGTWRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE 481
                                                                                                                                                                                                                                                                                                                                                                                                                   SIYKIPQLVKSQGLDDLVCTRFGIDAPEADLSEWEQVIYEEANPTGEVTIGMVGKYIELP 302
                                                                                                                                                                                                                                                                                                                                                                                                                                  TIYRIPLLLREQGLDDLYVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGEVKTKPTQHSVKELLSIGIQPDILVCRSDRMIPANERKKIALFCNVPEKAVISMKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TEDGAETDLDLGHYERFLKTIMTKKNNFTIGQVYEQVLRNERKGDYLGATVQVIFHITDE 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PS00442;
                                                                                                                                                                                             KAGLKVSGLSADKKLVEMIENPAHPWFVAAQFHPBFTSTPRDGHPLFAGFVKAAGQY
                                                                                                                                                                                                                                                                                                                                                             DAYKSVNEALKHAGLKNRLNVTIKYVDSQDIETKGVELLEGLDAILVPGGFGDRGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                      DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TEDGAETDLDLGHYERFIRTKMTKRNNFTAGRVYADVLRKERRGDYLGATIQVI PHITNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TNYIFVTGGVVSSLGKGIAAASLAAILEARGLKVTMMKLDPYINVDPGTMSPTQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IKDRVIAGSEGHDIAIVEVGGTVGDIESLPFMEAIRQLAVELGRERAMFMHLTLVPYLAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
379
515
517
546 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    biosynthesis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A
A
                                                                                                                         STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GATASE_TYPE_I;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   300
546
379
515
517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             69.5%;
                                                                  Last sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ligase;
             Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3
                             citri)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 1937; DB 1;
Pred. No. 5e-114;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AMINATOR DOMAIN.
GLUTAMINE AMIDOTRANSFERASE.
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        E33C935EA5EB89E4 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1.
Glutamine
                                                                                                                         554
                                                                     update)
                                                    ligase)
                                                                                                                         A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       amidotransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 96;
              Xanthomonadales
                                                      (CTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 546;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                      synthetase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                <u>.</u>
                                                                                                                                                                                                                                                                                                                                                                                         361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           62
```

```
δ
                                                                         片
                                                                                                                    S
                                                                                                                                                                      밁
                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local s
Matches 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RA Camarotte G. Cannavan F. Cardozo J. Chambergo F. Clapina L.P.
RA Clacarelli R.M.B. Coutinho L.L., Cursino-Santos J.R., El-Dorry H.,
RA Faria J.B., Ferreira A.J.S., Ferreira R.C.C., Ferro M.I.T.,
RA Formighteri B.F., Franco M.C., Greggio C.C., Gruber A.,
RA Katsuyama A.M., Kishi L.T., Leite R.P., Lemos E.G.M., Lemos M.V.F.,
RA Katsuyama A.M., Kishi L.T., Leite R.P., Lemos E.G.M., Lemos M.V.F.,
RA Katsuyama A.M., Kishi L.T., Leite R.P., Lemos E.G.M., Lemos M.V.F.,
RA Martins E.C., Meidanis J. Menck C.F.M., Miyaki C.Y., Moon D.H.,
RA Martins E.C., Meidanis J. Menck C.F.M., Miyaki C.Y., Moon D.H.,
RA Moreira L.M., Novo M.T.M., Okura V.K., Oliveira M.C., Oliveira V.R.,
RA Moreira H.A., Rossi A., Sena J.A.D., Silva C., de Souza R.F.,
RA Spinola L.A.F., Takita M.A., Tamura R.B., Teixeira B.C., Tezza R.I.D.,
RA Setubal J.C., Kitajima J.P.;
RComparison of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of two Xanthomonas pathogens with differing the second control of the genomes of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL; AE011804; AAM36583.1; -.
HAMAD; MF 01227; -; 1.
InterPro; IPR00991; GATAsee_1.
InterPro; IPR004468; PyrG.
Pfam; PP00117; GATase; 1.
TIGRFAMS; TIGR00337; PyrG; 1.
PROSITE; PS00442; GATASE TYPE I; 1
Pyrimidine biosynthesis; Ligase; G.
                                                                                                                                                                                                                                                                                                                                                            DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Nature 417-459-463 (2002).

Nature 417-459-463 (2002).

-!- FUNCTION: Catalyzes the ATP-dependent amination of UTP to -!- FUNCTION: Catalyzes amonnia as the source of nitrogen ()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -!- SUBUNIT: Homotetramer (By similarity).
-!- SIMILARITY: Belongs to the CTP synthase family.
-!- SIMILARITY: Contains 1 type-1 glutamine amidotransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRAIN=306 / AFCC 13902 / XV 101;

MEDLINE=22022145; PubMed=10204217;

da Silva A.C.R., Ferro J.A., Reinach F.C., Farah C.S., Furlan L.R.,

Quaggio R.B., Monteiro-Vitorello C.B., Van Sluys M.A., Almeida N.F.,

Quaggio R.B., Monteiro-Vitorello C.B., Van Sluys M.A., Almeida N.F.,

Alves L.M.C., do Amaral A.M., Bertolini M.C., Camargo L.E.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
STRAIN=306 / ATCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=92829;
[1]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                either L-glutamine or ammonia as the source of nitrogen similarity).

CATALYTIC ACTIVITY: ATP + UTP + NH(3) = ADP + phosphate ENZYME REGULATION: Allosterically activated by GTP, when is the substrate. Inhibited by CTP (By similarity).

PATHAY: Pyrimidine biosynthesis; conversion of UMP to (1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (last) step.
                              121
                                                                         43
                                                                                                                      61
                                                                                                                                                                                                                      μ
                                                                                                                                                                                                                                                                                          Similarity
                                                                      EIKRRYYESAEGKDVALIEVGGTVGDIESLPFLETIRQKGVELGRDRALFIHLTLVPYIK
                                                                                                                                                                                                    MTKPIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                      MTPLIFVTGGVVSSLGKGIAAASLASILEARGLKVTMMKLDPYINVDPGTMSPPQHGEVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         protecme.
                                                                                                                                                                                                                                                                                                                                                         302
380
518
520
                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                          301
554
380
518
520
61482.
                                                                                                                                                                                                                                                                                        67.08;
                                                                                                                                                                                                                                                                                                                                                                 ¥.
                                                                                                                                                                                                                                                                    79;
                                                                                                                                                                                                                                                                 Score 1931; D
Pred. No. 1.2e
79; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                     GLUTAMINE AMIDOTRANSFERASE
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AMINATOR DOMAIN
                                                                                                                                                                                                                                                                                                                                                              80DD42A9DBA23596 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.
Glutamine
                                                                                                                                                                                                                                                                                        1931;
No. 1.
                                                                                                                                                                                                                                                                                        DB 1;
.2e-113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                amidotransferase;
                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                 554;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     when
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTP; third
                                                                                                                                                                                                                                                                    4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            íβγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  glutamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ДŢ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CHP.
                                                                              120
                                                                                                                           120
                                                                                                                                                                         9
                                                                                                                                                                                                                      60
```

```
RESULT 7
PYRG_VIBVU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tyrkg VIEVU STANDARD; PRT; 545 AA.

Q8DC63;
15-SEP-2003 (Rel. 42, Created)
15-SEP-2003 (Rel. 42, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
CTP synthase (EC 6.3.4.2) (UTP--ammonia ligase)
PYRG OR VV11578.
                                                                                                                                                                                                                                                                                                                                                                              Rhee
Choy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Vibrio vulnificus.
Bacteria; Proteobacteria;
Vibrionaceae; Vibrio.
                                                                                                                                                                                                                                                                                                               "Complete genome sequence of Vibrio vulnificus CMCP6.";
Submitted (DEC-2002) to the EMBL/GenBank/DDBJ databases:
-i-FUNCTION: Catalyzes the ATP-dagendent amination of UTP t
either L-glutamine or ammonia as the source of nitrogen
                                                                                                                                                                                                                                                                                                                                                                                                            STRAIN=CMCP6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=672;
                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                               (last) step.
SUBUNIT: Homotetramer (By similarity).
SIMILARITY: Belongs to the CTP synthase family.
SIMILARITY: Contains i type-1 glutamine amidotransferase domain.
                                                                                                                                                                                                                                CATALYTIC ACTIVITY: ATP + UTP + NH(3) = ADP + phosphate + ENZYME REGULATION: Aliosterically activated by GTP, when g is the substrate. Inhibited by CTP (By similarity).

PATHWAY: Pyrimidine biosynthesis; conversion of UMP to CTP
                                                                                                                                                                                                                                                                                                 similarity.
                                                                                                                                                                                                                                                                                                                                                                              J.H., Kim S.Y.,
H.E.;
 AE016802; AAO10002.1;
; MF_01227; -; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RTATGEVEKRDEKSDLGGTMRLGLQEQRLKPGTLAREVYGKDVVAERHRHRYETNNRYRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SAGBLKTKFTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVARKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EKKAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QEBAAGMKFSGKSLDGRLVEIIELPB--HPWFLACQFHPEFTSTPRNGHALFSGFVEAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLK 478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GKVQTSKFAREQKVPYFGICYGMQAAVVDYARHVADLDAANSTENDRQSPHPVIGLITEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHFVIGLITEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DHQDAYKSVAEALRHGGLRQRTKVNLKWLEAQDLBGSDMSALQDIDGILVEGGFGDRGFE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DTIYRIPLLLREQGLDDLVVDQLRL--DVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAGELKTKPTQHSVKELRSIGIQPDVLLCRSEQAVPDSERRKIALFINVSERAVISCPDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EIRRCIDEATAGEDVALIEIGGTVGDIESLEFLEAIRQVRTERGAEKAMEMHLTLVPYIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KHKIQG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QLEDAGLVISGKSMDDTLVEVVELPRDTHPWFLACQAHPEFLSTPRDGHPLFIGFVRAAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DHTDAYKSLNBALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DVLYGMPLELLRQGLDELVIDQFKLRDKVAAADLSEWAAVVDAVKHPLDEVNIAVVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             542
                                                                                                                                                                                                                                                                                                                                                                                           Chung
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                          s.s.,
                                                                                                                                                                                                                                                                                                                                                                                          Kim J.J., Moon Y.H.,
                                                                                                                                                                                                                                                                                                                                 amination of UTP to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Vibrionales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (CTP synthetase)
                                                                                                                                                                                                                                                                                                                                                                                             Jeong
                                                                                                                                                                                                                                     CTP; third
                                                                                                                                                                                                                                                                                                                                                                                             Η.,
                                                                                                                                                                                                                                                                                                                (By
                                                                                                                                                                                                                                                                  glutamine
                                                                                                                                                                                                                                                                                    CTP.
                                                                                                                                                                                                                                                                                                                                 CTP
                                                                                                                                                                                                                                                                                                                                   with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          240
```

```
RESULT 8
PYRG VIBCH
ID PYRG V
AC Q9KPGA
AC Q9KPGA
DT 28-PEB
DT 28-PEB
DT 28-PEB
DT 28-PEB
DT 28-PEB
OS VIBCIO
OS VIBCIO
OC BACTER
OC VIBCIO
OX NCBIT
RN [1]
RN SEQUEN
RX MEDLIN
RA Heidel
                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local S
Matches 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
SEQUENCE
                                                                                                                            28-FBB-2003 (Rel. 41, Created)
28-FBB-2003 (Rel. 41, Last sequence update)
28-FBB-2003 (Rel. 41, Last annotation update)
CTP synthase (EC 6.3.4.2) (UTP--ammonia ligase)
                                                                                                                                                                  Q9KPC4;
28-FBB-2003
 SEQUENCE FROM N.A.
STRAIN=El TOR N16961 / Serotype Ol;
MEDLINE=20406833; PubMed=10952301;
Heidelberg J.F., Eisen J.A., Nelson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TIGREAMs; TIGR00337; PyrG; 1.
PROSITE; PS00442; GATASE_TYPE_I; 1.
Pyrimidine biosynthesis; Ligase; Glutamine amidotransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro; IPR000991; GATase 1.
InterPro; IPR004468; PyrG.
Pfam; PF00117; GATase; 1.
                                                                                                     Vibrio cholerae
                                                                                                                                                                                             PYRG VIBCH
                                                              NCBI_TaxID=666;
                                                                           Vibrionaceae; Vibrio
                                                                                         Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Complete
                                                                                                                 OR VC2448
                                                                                                                                                                                                                                                           483
                                                                                                                                                                                                                                                                                  482
                                                                                                                                                                                                                                                                                                           423
                                                                                                                                                                                                                                                                                                                                    422
                                                                                                                                                                                                                                                                                                                                                            363
                                                                                                                                                                                                                                                                                                                                                                                                              303
                                                                                                                                                                                                                                                                                                                                                                                                                                     302
                                                                                                                                                                                                                                                                                                                                                                                                                                                              243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     360;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                           KAGLKVSGLSADKKLVEMI ENPNHPWFVAAQFHPBFTSTPRDGHPLFSGFI KAAGEN
                                                                                                                                                                                                                                                                                                         STVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEWMDE
::|||||:|||||||:|
LAAKYARENKVPYLGICLGMQVALIEYARNVAGMEGAHSTEFNKDTKYPVVGLITEWVDS
                                                                                                                                                                                                                                                                                                                                                                                                                       DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVBGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IKRRYYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TEDGAETDLDLGHYERFLKTIMTKKONFTTGQYYEQVLRNERKGDYLGATVQVIPHITDE
                                                                                                                                                                                                                                                                               AAGMKFSGKSLDGRLVBIIELPEHPWFLACQPHPBFTSTPRNGHALFSGFVEAAAKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                              SIYKIPQLIKSQGLDDLVCARFGINAPEADLSEWEQVIYEBANPTGSVTIGWVGKYIELP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGELKIKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TNYIFVIGGVVSSLGKGIAAASLAAILEARGLKVIMMKLDPYINVDPGTMSPTQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                              DAYKSVNEALKHAGLKNRLSVNÍKYVDSQDVETKGVEVLQGLDAILVPGGFGDRGIEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGEVKTKPTQHSVKELLSIGIQPDILVCRSDRMIPANERKKIALPCNVPEKAVISMKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IXDRVINGSQGHDVAIVEVGGTVGDIESLPFMEAIRQLAVEIGRERAMFMHLTLVPYLAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TEDGAETDLDLGHYERFIRTKMTKRNNFTAGRVYSDVLAKERRGDYLGATIQVIPHITND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1
301
379
515
517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A
                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  300
545
379
515
517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  69.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      59872
                                                                                         Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Œ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    80;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 1925; DB 1;
Pred. No. 2.8e-113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AMINATOR DOWAIN.
GUUTAMING AMIDOTRANSFERASE
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0E711A40595F2E05 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S (BY SIMILARITY).
S (BY SIMILARITY).
S (BY SIMILARITY).
  W.C.,
                                                                                                                                                                                              544
                                                                                                                                                                                             A
    Clayton
                                                                                                                              (CIIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
    R.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                              synthetase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              545;
     Gwinn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0
      3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                           482
                                                                                                                                                                                                                                                                                                                                     481
                                                                                                                                                                                                                                                                                                                                                             422
                                                                                                                                                                                                                                                                                                                                                                                     421
                                                                                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                              362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
```

```
S
                                                                                           멼
                                                                                                                            S
                                                                                                                                                                                  Дb
                                                                                                                                                                                                                                  Ś
                                                                                                                                                                                                                                                                                  B
                                                                                                                                                                                                                                                                                                                         5
                                                                                                                                                                                                                                                                                                                                                                                 문
                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SET THE TEXT OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PROSITE; PS
Pyrimidine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   use by non-profit institutions as long as modified and this statement is not removed. U entitles requires a license agreement (See htt or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Dodson
Gill S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nature 406:477-483(2000).
-!- FUNCTION: Catalyzes the ATP-dependent either L-glutamine or ammonia as the s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Salzberg S.L., Fraser C.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HAMAP; MF_01227; -; 1.
InterPro; IPR000991; GATase_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TIGR; VC2448;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL; AE004315; AAF95590.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cholerae.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pfam; PF00117;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "DNA sequence of both
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ermolaeva M.D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        s SWISS-PROT entry is copyright. It is produced through a collaboratic ween the Swiss Institute of Bioinformatics and the EMBL outstation European Bioinformatics Institute. There are no restrictions on it by non-profit institutions as long as its content is in no wa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SUBUNIT: Homotetramer (By similarity).
SIMILARITY: Belongs to the CTP synthase
SIMILARITY: Contains 1 type-1 glutamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           similarity).

CATALYTIC ACTIVITY: ATP + UTP + NH(3) = ADP + phosphate + ENZYME REGULATION: Allosterically activated by GTP, when g is the substrate. Inhibited by CTP (By similarity).

PATHARY: Pyrimidine biosynthesis; conversion of UMP to CTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (last) step.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      E82074; E82074.
302
                                           302
                                                                                                                                         242
                                                                                                                                                                                         182
                                                                                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                        122
                                                                                                                                                                                                                                                                                                                                   122
                                                                                                                                                                                                                                                                                                                                                                                   82
                                                                                                                                                                                                                                                                                                                                                                                                                              62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R.J., Haft D.H., Hickey E.K., Peterson J.D., Umayam L.A., R., Nelson K.E., Read T.D., Tettelin H., Richardson D., ex., Nelson K.E., Read T.D., Settelin H., Dragoi I., Seller eva M.D., Vemathevan J., Bass S., Qin H., Dragoi I., Seller id L., Utterback T., Fleischmann R.D., Nierman W.C., White R.S., Smith H.O., Colwell R.R., Mekalanos J.J., Venter Cry S.L., Smith H.O., Colwell R.R., Mekalanos J.J., Venter Cry
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                   AGELKTKPTQHSVKELRTIGTQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PS00442; GATASE_TYPE_I;
ne biosynthesis; Ligase;
DAYKSVNEALKHAGLKNRLSVTIKYVDSQDVETKGTDVLNGLDAILVPGGFGDRGIEGKI
                         DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGKI
                                                                                                                                      TIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDBVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                              IKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                    TEDGAETDLDLGHYERFLKTTMTKKNNFTTGQYYEQVLRNERKGDYLGATVQVIPHITDE
                                                                                                                                                                                                                                                                                     IKDRVIAGSEGHDIAIVEVGGTVGDIESLPFMEAIRQLAIEVGREHAMFMHLTLVFYLAA
                                                                                                                                                                                                                                                                                                                                                                                   TEDGAETDLDLGHYERFIRTKMTKRNNFTAGRVYADVLKKERRGDYLGATIQVIPHITNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TNYIFVTGGVVSSLGKGIAAASLAAILEARGLKVTMMKLDPYINVDPGTMSPTQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         300
378
514
516
544 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                           PQLIRSQGLDDLVCARFGINAPBADLSEWEQVIYBEANPTGEVTIGMVGKYTELP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GATase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  299
544
378
514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 69.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           59754 MW;
                                                                                                                                                                                       KELLSIGIOPDILVCRSDRMIPANERKKIALFCNVPEKAVISMKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    chromosomes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             76;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BY SIMILARITY.

AMINATOR DOMAIN.

GLUTAMINE AMIDOTRANSFERASE.

GATASE (BY SIMILARITY).

GATASE (BY SIMILARITY).

GATASE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 1924, DB 1;
Pred. No. 3.2e-113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3ACABEF85C3C5398 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches

    Glutamine amidotransferase;

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ō,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 the cholera pathogen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             moved. Usage by and fo
(See http://www.isb-sib
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   amination of UTP to
source of nitrogen {I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  amidotransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 544;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                of UMP to CTP; third
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Vibrio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sellers P., White O.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            glutamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         commerci
361
                                                361
                                                                                           301
                                                                                                                                         301
                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                         241
                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    :5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
Query Match
Best Local Similarity
Matches 365; Conserv
                                                        DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PYRG PASMU
Q9CUW9;
28-FEB-2003
                                                                                                                                                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through a collabora between the Swiss Institute of Bioinformatics and the EMBL outstati the Buropean Bioinformatics Institute. There are no restrictions on use by non-profit institutions as long as its content is in no modified and this statement is not removed. Usage by and for commer entitles requires a license agreement (See http://www.isb-sib.ch/annou or send an email to license@isb-sib.ch).
                                                                                                                                                                                               EMBL; AB006225; AAX03956.1; -.
HAMAP; MF 01227; -; 1
InterPro; IPR000991; GATase 1.
InterPro; IPR004468; PyrG.
Pfam; PF00117; GATase; 1.
                                                                                                                                                    May B.J., Zhang Q., Li L.L., Paustian M.L., Whittam T.S., Kapu "Complete genomic sequence of Pasteurella multocida Pm70."; Proc. Natl. Acad. Sci. U.S.A. 98:3460-3465(2001).
-!- FUNCTION: Catalyzes the ATP-dependent amination of UTP to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  28-FEB-2003 (Rel. 41, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
28-FEB-2003 (Rel. 41, Last amotation update)
28-FEB-2003 (Rel. 41, Last amotation update)
CTP synthase (EC 6.3.4.2) (UTP--ammonia ligase)
                                                                                                                                DOMAIN

    -!- SIMILARITY: Belongs to the CTP synthase family.
    -!- SIMILARITY: Contains 1 type-1 glutamine amidotransferase

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=21145866; PubMed=11248100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pasteurellaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bacteria; Proteobacteria; Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pasteurella multocida
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PYRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PASMU
                                                                                                                                                                                                                                                                                                                                                                                                                                                          CATALYTIC ACTIVITY: ATP + UTP + NH(3) = ADP + phosphate + ENZYME REGULATION: Allosterically activated by GTP, when g is the substrate. Inhibited by CTP (By similarity).

PATHWAY: Pyrimidine biosynthesis; conversion of UMP to CTP
                                                                                                                                                                                                                                                                                                                                                                                                                                {last) step.
SUBUNIT: Homotetramer (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    similarity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 either L-glutamine or ammonia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OR PM1872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    422
                                                                                                                                           proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STVRFARENKIPYLGICLGMQSAVIBPARNVVGLEGAHSTEFLPKSPHPVIGLITEMMDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KAGLKVSGLSADKKLVEVIENPAHPWFVAAQFHPEFTSTPRDGHPLFAGFVKAAGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAGMKFSGKSLDGRLVEIIBLPEHPWFLACQFHPEFTSTFRNGHALFSGFVEAAAK 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGELVTRDEDSDLGGTMRLGAQXCRLKADSLAFQLYQXDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RAAQYARENKIPYLGICLGMQVALIEYARNVAGMEGAHSTEENKNTKYPVVGLITEMVDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BGNVEERSEKSDLGGTMRLGSQLCHLEKGTKAYELYGSATIHERHRHRYEVNNLLRPQIE
                                                        301
379
515
517
542
                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STANDARD;
                                              300
542
379
515
517
59801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pasteurella.
             68.8%;
68.4%;
                                                           ¥.
                                                        AMINATOR DOMAIN.
GLUTAMINE AMIDOTRANSFERASE.
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
C2A72913A502F612 CRC64;
            Score 1918;
Pred. No. 7.
 Mismatches 101;
                                                                                                                                                         1.
Glutamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   the source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ይ
                              DB 1;
                                                                                                                                                          amidotransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OF.
                            Length 542;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (CTP synthetase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   nitrogen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kapur
                                                                                                                                                                                                                                                                                                                                                              a collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTP; third
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    æ
                                                                                                                                                                                                                                                                                                                                                                                                       domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       glutamine
                                                                                                                                                                                                                                                                                                                                             outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 d.
                                                                                                                                                                                                                                                                                                                   commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421
```

Conservative

68

Indels

0

0

```
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                   PYRG_ECOLI
P08398;
01-AUG-1988
                                 MEDLINE=97426617; PubMed=9278503;
Blattner F.R., Plunkett G. III, Bloch C.J.
Riley M., Collado-vides J., Glasner J.D.,
Gregor J., Davis N.W., Kirkpatrick H.A.,
Mau B., Shao Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             ECOLI
Science
[3]
                                                                                                                                                                                                                                                                                                                 PYRG OR B2780 OR C3345 OR
Escherichia coli,
Escherichia coli 06,
Escherichia coli 0157:H7,
                                                                                                                                                                                                                                                                                                                                                        01-AUG-1988 (Rel. 08, Created)
01-OCT-1996 (Rel. 34, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
CTP synthase (BC 6.3.4.2) (UTP--ammonia ligase) (CTP synthese)
PYRG OR B780 OR C3345 OR Z4095 OR ECS3640 OR SF2795.
                                                                                                                                                                                                                                                             Bacteria; Proteobacteria; Gammaproteobacteria;
Enterobacteriaceae; Escherichia.
NCBI_TaxID=562, 217992, 83334, 623;
                                                                                                                                                                synthetase."
                                                                                                                                                                                           MEDLINE=86168304;
Weng M., Makaroff
                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                                                                                         Shigella flexneri.
             The complete genome sequence of Science 277:1453-1474(1997).
                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                             "Nucleotide sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIYQIPALLKSQGLDDFICQRFHLDCPEADLSEWEQVLYQEANPTGEVVIGMVGKYTELP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KAGLKVTGLSADKKLVEIIEVPNHPWFVACQFHPEFTSTPRDGHPLFAGFVKAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | : || : |||||
EGNIETRTDASDLGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STVRFARENKIPYLGICIGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITEWMDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DAYKSLNEALIHAGIHTRHKVQISYIDSETIBAEGTAKLKNVDAILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TODGAETDLDLGHYERFIRTKMTKRNNFTTGKIYSEVLRKERRGDYLGATIQVIPHITNE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TEDGAETDLDLGHYERFLKTIMTKKNINFTTGQVYEQVLRIERKGDYLGATVQVIPHITDE
                                                                                                                                                      Chem.
                                                                                                                                                                                                                                    FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LTAKYARENHI PYLGI CLGMQVAY I EYARNVAGLTDANSTEFDRTCDYPVVGLI TEWQDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DAYKSVNEALKHAGLKNRLSVQIKYIDSQDVETKGTEVLEGVDGILVPGGFGNRGVBGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TIYRIPLLLREQGLDDLVVDQLREDVPAADLSAWEKVVDGLTHFTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGEVKTKPTQHSVKELLSIGIQPDVLICRSDRMVPPNERAKIALFCNVPERAVISLKDVS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IKSRVIDGAAGHDVAIVEVGGTVGDIESLPFIEALROLAVOVGRERTLFMHLTLVPYIPT
                                                                                                                                                                                                                        .0011
                                                                                                                                                   261:5568-5574(1986)
                                                                                                                                                                                                                                                                                                                                                                                                                                               STANDARD;
                                                                                                                                                                               PubMed=3514618;
C.A., Zalkin H.
nce of Escherich
                                                                                                                                                                               Zalkin H.;
Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        and
                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                           Escherichia coli K-12.";
                                                                                                                                                                                coli
                                                                                                                                                                                                                                                                                                                                                                                                                                               544
                                                     C.A., Perna N.T., Burland
.D., Rode C.K., Mayhew G.F.
A., Goeden M.A., Rose D.J.,
                                                                                                                                                                            pyrG
                                                                                                                                                                                                                                                                                                                                                                                                                                               ξ
                                                                                                                                                                                                                                                                                            Enterobacteriales
                                                                                                                                                                                å
                                                       D.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          24I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
```

ঠ 밁 Ś 밁 Ś g 5 ď Ś 맑 5 밁 δ 밁 S 밁

```
SPECIES=E.col;
MEDLINE=87250264; P. Zalkin H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE OF 1-12.

SEQUENCE OF 1-12.

SEQUENCE OF 1-12.

SEQUENCE OF 1-12.

SEQUENCE OF 1-12.

MEDLINE=97443975; PubMed=9298646;

Link A.J., Robison K., Church G.M.;

"Comparing the predicted and observed properties in the genome of Escherichia coli K-12.";

Flectrophoresis 18:1259-1313(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   through
Nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SPECIES=S.flexmeri; STRAIN=301 / Serotype 2a; MEDLINB=22772406; PubMed=12384590; Jin Q., Yuan Z., Xu J., Wang Y., Shen Y., Lu W., Wang Yang J., Yang G., Wu H., Yang J., Yang F., Zhang X., Zhang J., Yang G., Wu H., Sun L., Xue Y., Zhao A., Gao Y., Zhu J., Kan B., Ding Cheng H., Yao Z., He B., Chen R., Ma D., Qiang B., Wer Y., Zho B., He B., Chen R., Ma D., Qiang B., Wer Y., Zho B., He B., Chen R., Ma D., Qiang B., Wer Y., Zho B., He B., Chen R., Ma D., Qiang B., Wer Y., Zho B., Lang B., Lang B., Wer Y., Zho B., Lang B., Wer Y., Zho B., Lang B., Wer Y., Zho B., Lang B., Wer Y., Zho B., Lang B., Lang B., Wer Y., Zho B., Lang B., Lang B., Wer Y., Zho B., Lang B., Lang B., Wer Y., Zho B., Lang B., Lang B., Wer Y., Zho B., Lang B., Wer Y., Zho B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., Lang B., 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SBÖUBNCE FROM N.A.

SPECIES=E.Coli; STRAIN=0157:H7 / EDL933 / ATCC 700927;

SPECIES=E.Coli; STRAIN=0157:H7 / EDL933 / ATCC 700927;

MEDLINB=21074935; PubMed=11206551;

MEDLINB=21074935; PubMed=11206551;

Perna N.T., Plunkett G. III, Burland V., Mau B., Glasner J.D.,

Rose D.J., Mayhew G.F., Evans P.S., Gregor J., Kirkpatrick H.A.,

Rose D.J., Hackett J., Klink S., Boutin A., Shao Y., Miller L.,

Posfai G., Hackett J., Klink S., Boutin A., Shao Y., Miller L.,

Grotbeck E.J., Davis N.W., Lim A., Dimalanta E.T., Potamousis K.,

Apodaca J., Anantharaman T.S., Lin J., Yen G., Schwartz D.C.,

Welch R.A., Blattner F.R.,

Welch R.A., Blattner F.R.,

"Genome sequence of enterohaemorrhagic Escherichia coli O157:H7."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.

SPRCIBS=B.coli, STRAIN=06:H1 / CFT073 / ATCC 700928;

SPRCIBS=B.coli, STRAIN=06:H1 / CFT073 / ATCC 700928;

MEDLINE=22388234, PubMed=12471157;

Welch R.A., Burland V., Plunkett G. III, Redford P., Roesch P.,

Welch R.A., Burland V., Plunkett G. III, Redford P., Roesch P.,

Rasko D., Buckles E.L., Liou S.-R., Boutin A., Hackett J., Stroud D.,

Mayhew G.F., Rose D.J., Zhou S., Schwartz D.C., Perna M.T.,

Mobley H.L.T., Donnenberg M.S., Blattner F.R.;

Mobley H.L.T., Donnenberg M.S., Blattner F.R.;

Mobley H.L.T., Donnenberg M.S., Blattner F.R.;

Mobley H.L.T., Schwartchia coli.";

Mobley H.L.T., Bacherichia coli.";

Proc. Natl. Acad. Sci. U.S.A. 99:17020-17024(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Hayashi T., Makino K., Ohnishi M., Kurokawa K., Ishii K., Yokoya Han C.-G., Ohtsubo E., Nakayama K., Murata T., Tanaka M., Tobe 1 Iida T., Takami H., Honda T., Sasakawa C., Ogasawara N., Yasunag Kuhara S., Shiba T., Hattori M., Shinagawa H.; Rocherichia coli "Complete genome sequence of enterohemorrhagic Escherichia coli 0157:H7 and genomic comparison with a laboratory strain K-12.", DNA Res. 8:11-22(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
SPECIES=E.coli; STRAIN=0157:H7 / R:
MEDLINE=21156231; PubMed=11258796;
                                                                                                                                                                                                                                                                                                                       "Structural role for a conserved a glutamine amide transfer domain.";
J. Bacteriol. 169:3023-3028(1987)
                 ROLE OF GTP,
SPECIES=E.col
                                                                                                                              synthetase."
                                                                                                                                                                                MEDLINE=93222179; PubMed=8385490; Robertson J.G., Villafranca J.J.;
                                                                                                                                                                                                                                                                     ENZYME REGULATORS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MUTAGENESIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Yu J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Nature 409:529-533(2001).
[5]
MEDLINB=21234865;
                                                                                                      Biochemistry
                                                                                                                                                           "Characterization
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        'Genome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  й Г.,
Чан.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sequence of Shigella flexneri 2a: insights into
comparison with genomes of Bscherichia coli Kl2
Acids Res. 30:4432-4441(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OF VAL-348;
                                              AND MUTAGENESIS OF CYS-378
                                                                                                      32:3769-3777 (1993)
                                                                                                                                                              of
t
PubMed=11336655
                                                                                                                                                                                                                                                                                                                                                                                                                                      PubMed=3298209
                                                                                                                                                              metal ion activation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GLY-350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          / RIMD 0509952;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AND
                                                                                                                                                                                                                                                                                                                                                                               region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GLY-351
                                                                                                                                                                                                                                                                                                                                                                                    ä
                                                                                                                                                              and
                                                                                                                                                                                                                                                                                                                                                                                       the
                                                                                                                                                                 inhibition
                                                                                                                                                                                                                                                                                                                                                                                       CTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           С
Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Wen
                                                                                                                                                                                                                                                                                                                                                                                    synthetase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        proteins
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          y J., Liu F
, Qu D., Do
y K., Chen
en Y., Hou
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                pathogenicity
and 0157.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            O157:H7.";
                                                                                                                                                              0£
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Yasunaga
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Yokoyama K.,
Tobe T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Chen S.,
Hou Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Dong
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           encoded
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Η.
```

```
Query Match
Best Local Similarity
Matches 363; Conserv
                                                          CONFLICT
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Biochem. J. 356:223-232(2001).

-!- FUNCTION: Catalyzes the ATP-dependent amination of UTP to CTP veither L-glutamina or ammonia as the source of nitrogen.

-!- CATALYTIC ACTIVITY: ATP + UTP + NH(3) = ADP + phosphate + CTP.

-!- ENZYME REGULATION: Allosterically activated by GTP, when glutal is the substrate. Also activated by magnesium. Inhibited by CT and by divalent metal ions such as copper and zinc.

and by divalent metal ions such as copper and zinc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      entities :
                                                                                                                                                                                                                                ACT_SITE
ACT_SITE
ACT_SITE
                                                                                                                                                                                                                                                                                                     Complete
INIT_MET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial
                                                                                                                                                                                                                                                                          DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                           BCoGene; EGIUDIU,
HAMAP; MF_01227;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gamma-semialdehyde and the roglutamine hydrolysis.";
Biochem. J. 356:223-232(2001)
                                                                                                                                  MUTAGEN
                                                                                                                                                                           MUTAGEN
                                                                                                                                                                                                                                                                                                                                    Pyrimidine
                                                                                                                                                                                                                                                                                                                                               TIGREAMS; TIGR003:
PROSITE; PS00442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bearne S.L.,
                                                                                                                                                                                                                                                                                          DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Inhibition
                                                                                                                                                                                                                                                                                                                                                                                                      InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  CO2DBASE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    tities requires a license agreement (S send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SUBUNIT: Homodimer in the absence of substrates and homotetramer in the presence of substrates with magnesium.

MISCELLANEOUS: GTP promotes glutamine amidotransferase activity, in part, by enhancing interactions between the enzyme and tetrahedral intermediate(s) formed during glutamine hydrolysis.

MISCELLANEOUS: Optimum pH is 8.7.

SIMILARITY: Belongs to the CTP synthase family.

SIMILARITY: Contains 1 type-1 glutamine amidotransferase domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       M12843; AAA24485.1; -...; U29580; AAA69290.1; -...; AE000361; AAC75822.1; -...; AE005506; AAA691793.1; -...; AE005506; BAB37063.1; -...; AE015293; AAN44283.1; -...; AE015293; AAN44283.1; -...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PATHWAY: Pyrimidine biosynthesis; conversion of UMP to CTP; third
                                                                                                                                                                                                                                                                                                                                                                                                                                                              H91083;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (last) step.
                                                                                                                                                                                                                                                                                                                                                                           PF00117; GATase;
                                                                                                                                                                                                                                                                                                                                                                                                                                  EG10810;
                                                                                                                                                                                                                                                                                                                    proteome.
                                                                                                                                                                                                                                                                                                                                                                                      _01227; -; 1.
_IPR000991; GATase_1.
_IPR004468; PyrG.
                                                                                                                                                                                                                                                                                                                             TIGR00337; PyrG; 1.
PS00442; GATASE_TYPE_I;
e biosynthesis; Ligase;
                                                                                                                                                                                                                                                                                                                                                                                                                                G060.3; 6TH J
                                                            337
475
544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         o
H
                                                                                                                                 378
                                                                                                                                                                                                                    300
378
514
516
348
      Conservative
                                                                                                                                                                           351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Hekmat O.,
                                                             AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ekmat O., MacDonnell J.E.,
Escherichia coli CTP synt
hyde and the role of the a
                                                          337
475
60243
                                                                                                                                                                                                                    5749
5749
5449
5449
5449
5449
                                                                                                                                 378
                                                                                                                                                                           351
                  68.7%;
                                                             MW.
                                                                      ACTIVITIES.

G->P: LOSS OF GLUTAMINE-DEPENDENT
ACTIVITY, BUT NO CHANGE IN AMMONIA-
DEPENDENT ACTIVITY.

C->A,S: LOSS OF GLUTAMINE-DEPENDENT
ACTIVITY, BUT NO CHANGE IN AMMONIA-
DEPENDENT ACTIVITY.

V -> L (IN REF. 1).

M -> S (IN REF. 1).
                                                                                                                                                                                                 AMINATOR DOMAIN.
GJUTAMINE AMIDOTRANSFERASE.
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
U->S: 30% INCREASE IN BOTH GLUTAM
U->S: 30% INCREASE IN BOTH GLUTAM
DEFENDENT AND AMMONIA-DEPENDENT
                  Score 1916;
Pred. No. 1
                                                            EA342793545355FC CRC64;
      Mismatches
                                                                                                                                                                                                                                                                                                                              1.
Glutamine amidotransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          P synthase by glutamate the allosteric effector
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (See http://www.isb-sib.ch/announce,
                     1e-112
                              DB 1;
    102;
                              Length
      Indels
                                 544:
                                                                                                                                                                                                                    GLUTAMINE-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GTP
    0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          n glutamine
h by CTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTP with
    Gaps
    0
```

```
PY REPRESENTED TO THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND OF THE SECOND O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     뭆
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    맒
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          먒
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                 MEDILINE=22137863; PubMed=12142430;
Deng W., Burland V., Plunkett G. III, Boutin A., Mayhew Perna N.T., Rose D.J., Mau B., Zhou S., Schwartz D.C., Perna N.T., Lindler I.E., Brubaker R.R., Plano G.V., Fetherston J.D., Lindler K.A., Nilles M.L., Matson J.S.,
                                                                                                                                                                                                                                                                                                            STRAIN=CO-92 / Biovar Orientalis;
MEDLINE=21470413; PubMed=11586550;
Parkhill J., Wren B.W., Thomson N.R., Titball R.W., Holden M.T.G.,
Parkhill J., Wren B.W., Thomson N.R., Churcher C., Mungall K.L.,
Prentice M.B., Sebaihia M., James K.D., Churcher C., Mungall K.L.,
Basham D., Bentley S.D., Brooks K., Cerdeno-Tarraga A.M.,
Chillingworth T., Cronin A., Davise R.M., Davis P., Dougan G.,
Chillingworth T., Kranlin N., Holroyd S., Jagels K., Karlyshev A.V.,
Feltwell T., Hamlin N., Holroyd S., Jagels K., Karlyshev A.V.,
Leather S., Moule S., Oyston P.C.F., Quail M., Rutherford K.,
Simmonds M., Skelton J., Stevens K., Whitehead S., Barrell B.G.;
"Genome sequence of Yersinia pestis, the causative agent of plague
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   28-FEB-2003 (Rel. 41, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
CTP synthase (EC 6.3.4.2) (UTP--ammonia ligase)
PYRG OR YPO3377 OR Y0813.
                           Straley S.C.,
Perry R.D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   YERPE
                                                                                                                                                                                                SEQUENCE FROM N.A.
STRAIN-KIM5 / Biovar Mediaevalis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bactería; Proteobacteria; Gammaproteobacteria;
Enterobacteriaceae; Yersinia,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Yersinia pestis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q8ZBN1;
                                                                                                                                                                                                                                                                                            Nature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PYRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    YERPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122
                                                                                                                                                                                                                                                                                         e sequence of Yersinia
413:523-527(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ŋ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DAGLRVAGRSGDDQLVEIIEVPNHPWFVACQFHPEPTSTPRDGHPLFAGFVKAASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NGNVEVRSEKSDLGGTWRLGAQQCQLVDDSLVRQLYNAPTIVERHRHRYEVNNMLLKQIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AGELVTRDEDSDLGGTMRLGAQXCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTARPARENNIPYLGICLGMQVALIDYARHVANMENANSTEFVPDCKYPVVALITEWRDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DAYKSVIBALKHGGLKNRVSVNIKLIDSQDVETRGVBILKGLDAILVPGGFGYRGVEGMI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGPGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SIYKIPGLLKSQGLDDYICKRFSLNCPEANLSEWEQVIFEEANPVSEVTIGMVGKYIELP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TIYRIPLLIREQGLDDLVVDQLRLDVPAADLSAWBKVVDGLTHPTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TEDGAETDLDLGHYERFLKTIMTKKNNFTTGQVYEQVLKNERKGDYLGATVQVIPHITDB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITEWMDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SGEVKTKPTQHSVKELLSIGIQPDILICRSDRAVPANERAKIALFCNVPEKAVISLKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IKERVLEGGEGHDVVLVEIGGTVGDIESLPFLEAIRQMAVEIGREHTLPMHLTLVPYMAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TEDGAETDLDLGHYERFIRTKWSRRNNFTTGRIYSDVLRKERRGDYLGATVQVIPHITNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 INYIFVIGGVVSSLGKGIAAASLAAILEARGLNVTIMKLDPYINVDPGTMSPIQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IKRRVYESABGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (CIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     synthetase)
                                                                                                                                           ດ
                                                                                                                                                                                                                                                                                                                     of plague.";
                                                                                                                                        .
T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
```

o Ff

Yersinia

pestis

```
Query Match
Best Local S
Matches 356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               - 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACT_SITE
ACT_SITE
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL; AJ414156; CAC92607.1; -.
EMBL; AE013684; AAM84400.1; -.
PIR; AC0410; AC0410.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pyrimidine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HAMAP; MF_01227; -; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bacteriol. 184:4601-4611(2002).

FUNCTION: Catalyzes the AIP-dependent amination of UTP to either I.-glutamine or ammonia as the source of nitrogen (B similarity).

CATALYTIC ACTIVITY: AIP + UTP + NH(3) = ADP + phosphate + CATALYTIC ACTIVITY: Allosterically activated by GTP, when g is the substrate. Inhibited by CTP (By Similarity).

PATHWAY: Pyrimidine biosynthesis; conversion of UMP to CTE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SUBUNIT: Homotetramer (By similarity).
SIMILARITY: Belongs to the CTP synthase family.
SIMILARITY: Contains 1 type-1 glutamine amidotransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (last) step.
                                                                                                                                                                    302
                                                                                                                         362
                                                                                                                                                                                                                                                                                                                                                                                                                         122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            356;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ν
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; PS00442; GATASE_TYPE_I; 1.
ine biosynthesis; Ligase; Glutamine amidotransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                      AGELVTRDEDSDLGGTMREGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                       STYRFARENKI PYLGICLGMQSAVIEFARNYVGLEGAHSTEFLPKSPHPVIGLITEWMDE
DGNVEIRTEESDLGGTMRVGGQQCHLTEGSLVRQMYGEPTIVERHRHRYEVNNMLLKQIE
                                                                                                                                                                 DAYKSVIEALKHGGLKNRLTVNIKLIDSQDVBTRGEEMLKELDAILIEGGFGYRGVEGKV
                                                                                                                                                                                      DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGPGERGVEGKI
                                                                                                                                                                                                                                                  SIYKIPGLLKSQGLDDYICKRFSLTCPEANLAEWEQVLYEESNPGGEVTIGMIGKYVELP
                                                                                                                                                                                                                                                                                         TIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWBKVVDGLTHPTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                      AGEVXTKPTQHSVKELLSIGIQPDVLICRSDRAVPANERAKIALFCNVPEKAVISLKDVD
                                                                                                                                                                                                                                                                                                                                                                              AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                       IKERIIEGGEGHDVVLVEIGGTVGDIESLPFLEAIRQMAVDVGREHTLYMHLTLVPYLAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TEDGAETDLDLGHYERFIRTKMTRRNNFTTGRIYSEVLRKERRGDYLGATIQVIPHITNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TEDGAETDLDIGHYERPLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TNY I FVTGGVVSSLGKGI AAASLAA I LEARGLNVT IMKLDPY I NVDPGTMSPTQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                           IKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IPR000991; GATase_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   300
378
514
516
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GATase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   544
544
514
516
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  68.58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 60232 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          90;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 1909; νο -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AMINATOR DOMAIN.
GLUTAMINE AMIDOTRANSPERASE
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A5BB8A2583C5C001 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              102;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     of UMP to CTP; third
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTP, when glutamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         544;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ίBγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  comain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTP with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                        481
                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5
  481
                                                                                   421
                                                                                                                         421
                                                                                                                                                                    36I
                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
```

δ

밁 Ś 뫉 δ Ŗ Ş 망 Ś Ś 밁 á g 5

B

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the Eventhe European Bioinformatics Institute. There are no restructe by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use by non-profit institutions as long as its content use as a long as its content use as a long as its content use as a long as its content use as a long as a long as its content use as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long as a long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Rd.";
Science 269:496-512(1995).
-!- FUNCTION: Catalyzes the ATP-dependent amination of UTP to
-!- FUNCTION: Catalyzes the ATP-dependent amination of UTP to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=95350630; PubMed=7542800;
Fleischmann R.D., Adams M.D., White O., Clayton R.A., Merrick J Fleischmann R.D., Adams M.D., White O., Clayton R.A., Merrick J McKenlavage A.R., Bult C.J., Tomb J.-F., Dougherty B.A., Merrick J McKenney K., Sutton G., Fitzhugh W., Fields C.A., Gocayne J.D., Scott J.D., Shirley R., Liu L.-I., Glodek A., Kelley J.M., Weidman J.F., Philips C.A., Spriggs T., Hedblom B., Cotton M.D. Utterback T.R., Hanna M.C., Nguyen D.T., Saudek D.M., Brandon R. Fine L.D., Fritchman J.L., Fuhrmann J.L., Geoghagen N.S.M., Gnehm C.L., McDonald L.A., Small K.V., Fraser C.M., Smith H.O., Venter J.C.;
                                                                                                                                                                                                                                                     HAMAP; MF 01227; -; 1.
InterPro; IPR000991; GATase_1.
InterPro; IPR004468; PyrG.
                                                                                                                                                                                                                                                                                                                        EMBL; U32788; AAC22733.1; PIR; F64181; F64181. TIGR; HI1077;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
STRAIN=Rd / KW20 / ATCC 51907;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Haemophilus influenzae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               28-FEB-2003 (
CTP synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             P44341;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PYRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HABIN
                                                                                                                                                                                                                                                                                                                                                                                                                    entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pasteurellaceae;
                                                                                                                                        :omplete
                                                                                                                                                              Pyrimidine biosynthesis; Ligase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Whole-genome random sequencing
                                                                                                                                                                                                                                    fam; PF00117; GATase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (last) step.
SUBUNIT: Homotetramer (By similarity).
SIMILARITY: Belongs to the CTP synthase family.
SIMILARITY: Contains I type-1 glutamine amidotransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CATALYTIC ACTIVITY: ATP + UTP + NH(3) = ADP + phosphate + ENZYMB REGULATION: Allosterically activated by GTP, when 9 is the substrate. Inhibited by GTP (By similarity).

PATHWAY: Pyrimidine biosynthesis; conversion of UMP to CTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         similarity)
CATALYTIC A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HABIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AACMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAKHK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAGLRVAGRSADNKLVEIIELPDHPWFVACQFHPEFTSTPRDGHPLFAGFVKAAGDYQ
                                                                                                                                        proteome.
                                                                                                                                                                                  PS00442;
                                                                                                                                                                                                           TIGR00337; PyrG; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5 (Rel. 32, Create
5 (Rel. 32, Last s
3 (Rel. 41, Last s
se (EC 6.3.4.2) (U
                           301
379
515
517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Haemophilus.
                                                                                                                                                                                       GATASE
                        300
545
515
517
    60253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Created)
                                                                                                                                                                                     TYPE I;
    3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               : sequence update)
t annotation update)
(UTP--ammonia ligase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gammaproteobacteria;
AMINATOR DOMAIN.
GLUTAWINE AMIDOTRANSFERASE.
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               and assembly of Haemophilus influenzae

    Glutamine amidotransferase;

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      545
                                                                                                                                                                                                                                                                                                                                                                                                                                           (See http://www.isb-sib.ch/announce,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     There are no restrictions ong as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pasteurellales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gocayne J.D.,
Lley J.M.,
B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ALD)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    synthetase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  when glutamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SMBL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CIP; third
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (Ву
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     539
```

when

glutamine

CIP.

with

CTP; third

a collaboration

outstation -tions on its

```
밁
              5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ঠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
        RX MEDILINE-20365717; PubMed=10910347;
RX Simpson A.J.G., Reinach F.C., Arruda P., Abreu F.A., Acencio M.,
RA Alvarenga R., Alves L.M.C., Araya J.E., Baia G.S., Baptista C.S.,
RA Alvarenga R., Alves L.M.C., Araya J.E., Baia G.S., Baptista C.S.,
RA Barros M.H., Bonaccorsi E.D., Bordin S., Bove J.M., Briones M.R.S.,
RA Bueno M.R.P., Camargo A.A., Camargo L.E.A., Carraro D.M., Carrer H.,
Colauto N.B., Colombo C., Costa F.F., Costa M.C.R., Costa-Neto C.M.,
Coutinho L.L., Cristofani M., Dias-Neto E., Docena C., El-Dorry H.,
Racincani A.P., Perreira A.J.S., Ferreira V.C.A., Perro J.A.,
Racincani A.P., Ferreira A.J.S., Forbhme M., Furlan L.R.,
Ra Fraga J.S., Franca S.C., Franco M.C., Frohme M., Furlan L.R.,
Ra Garnier M., Goldman G.H., Goldman M.H.S., Gomes S.L., Gruber A.,
RA Frieger J.E., Kuramae B.E., Laigret F., Lambais M.R., Leite L.C.C.,
Lemos B.G.M., Lemos M.V., Martins B.M.F., Macino C.L.,
RA Machado M.A., Madeira A.M.B.N., Madeira H.M.F., Matsukuma A.Y.,
Martins B.A.L., Martins B.M.F., Matsukuma A.Y.,
Marchae M.C., Miracca E.C., Miyaki C.Y., Monteiro-Vitorello C.B.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Simi
Matches 364;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        XYLFA
                                                                                                                                                                                                                                                                                                                  Bacteria; Proteobacteria; Xanthomonadaceae; Xylella.
                                                                                                                                                                                                                                                                                                                                                                              28-FEB-2003 (Rel. 41, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
CTP synthase (EC 6.3.4.2) (UTP--armonia ligas
                                                                                                                                                                                                                                                                                                                                                                                                                         Q9PDU1;
28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                 PYRG
                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
STRAIN=9a5c;
                                                                                                                                                                                                                                                                                                  NCBI_TaxID=2371;
                                                                                                                                                                                                                                                                                                                                                 ÖR XF1288.
lla fastidiosa.
                                                                                                                                                                                                                                                                                                                                                                                                                                                         XYLFA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAGMKFSGKSLDGRIVBIIBLPEHPWFLACQFHPBFTSTPRNGHALFSGFVBAA-AKHK 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIYQIPALLKSQGLDDFVCERFRLTCPEADLTEWEQVLYXQANPVGEVTIGWVGXYTELP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KAGLKVTGLSADKKLVEIIEVPNHPWFVACQFHPEFTSTPRDGHPLFAGFVKAAYENHK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RTAQYARENKIPYLGICLGMQIALIEYARNVAGLTKANSSEFDKDCEQPVVALITEWQDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STVRFARENKI PYLGICLGMQSAVI EFARNVVGLEGAHSTEFLFKSPHPVIGLITEMMDB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DAYKSVNEALKHAGLTNRLSVNIKYIDSQDVETKGVEVLKGIDGILVPGGFGYRGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DAYKSLNEALIHAGIHTRHKVQISYIDSETIBAEGTAKLKNVDAILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TIYRIPLILIREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EGNTEVRTDESDLGGTMRLGAQQCHLVSGSRARELYGKETIEERHRHRYEVNNTLLPQIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                         STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QHSVXELLSIGIQPDVLICRSDRMIPPNERAKIALFCNVAERAVISLKDVN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                68.5%;
                                                                                                                                                                                                                                                                                                                                 Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                            (UTP--ammonia ligase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 1908.5;
Pred. No. 3e-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches 103;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3e-112;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 1;
                                                                                                                                                                                                                                                                                                                                                                               GTP
CTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                              synthetase)
лос.в.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ۲.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                 A Moon D.H., Nagai M.A., Nascimento A.L.T.O., Netto L.E.S.,

A Nhani A. Jr., Nobrega F.G., Nunes L.R., Oliveira M.A.,

A de Oliveira M.C., de Oliveira R.C., Palmieri D.A., Paris A.,

A peixoto B.R., Pereira G.A.G., Pereira H.A. Jr., Pesquero J.B.,

A Quaggio R.B., Roberto P.G., Rodrigues V., de Rosa A.J.M.,

RA de Rosa V.E. Jr., de Sa R.G., Santelli R.V., Sawasaki H.E.,

RA da Silva A.C.R., da Silva A.M., da Silva F.R., Silva W.A. Jr.,

RA de Solva A.P., Terenzi M.F., Truffi D., Tsai S.M., Tshiako M.H.,

RA de Solva A.P., Terenzi M.F., Truffi D., Tsai S.M., Tshiako M.H.,

RA Vallada H., Van Sluys M.A., Verjovski-Almeida S., Vettore A.L.,

RA Vallada H., Van Sluys M.A., Verjovski-Almeida S., Vettore A.L.,

RA Zago M.A., Zatz M., Meidanis J., Setubal J.C.,

RT "The genome sequence of the plant pathogen Xylella fastidiosa.";

RL Nature 406:151-159(2000)

CC -i-FUNCTION: Catalyzes the ATP-dependent amination of UTP to CTP wit
                                      S
                                                                        유
                                                                                              Ş
                                                                                                                                  멹
                                                                                                                                                             8
                                                                                                                                                                                           뮹
                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S
Matches 361
                                                                                                                                                                                                                                                                                                                                                                              DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                [interPro; interPro; interPro; interPro; interPro; interPro; PF00117; GATase; 1.
TIGRRAMS; TIGR00337; PYTG; 1.
PROSITE; PS00442; GATASE_TYPE_I; 1.
PROSITE; PS00442; GATASE_TYPE_I; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; AE003962; AAF84097.1; -. PIR; C82700; C82700.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        entities requires a license agreement (Se or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                         DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HAMAP; MF_01227; -; 1.
InterPro; IPR000991; GATase_1.
InterPro; IPR004468; PyrG.
                                                                                                                                                                                                                                                                                                                    361;
              241
                                                                         181
                                                                                                      181
                                                                                                                                   121
                                                                                                                                                                121
                                                                                                                                                                                               61
                                                                                                                                                                                                                          6
                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                      SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVÆEKAVISAIDA
                                                                                                                                                                                                               VTEDGAETDLDLGHYERFLKTTMTKKKNPTTGQVYEQVLKNERKGDYLGATVQVIPHITD 120
                DVLYGMPLELRRQGLDEIVIDQFKLSGTASLADLSEWEDVVDAIKHPLDEVTIAVVGKYV
                                           DTIYRIPLLIREQGLDDLVVDQLRLDVPA--ADLSAWEKVVDGLTHPTDEVSIAIVGKYV 298
                                                                        AAGELKTKPTQHSVKELRSIGIQPDVLLCRSEQVIPDSERRKIALFTNVSERAVIGCPDI
                                                                                                                                                                                             VTDDGABTDLDLGHYERFVRTRLSRNNSVTTGRIYQNVICKERRGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                            302
380
518
520
                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                              301
554
380
518
520
61558
                                                                                                                                                                                                                                                                                                                               68.3%;
66.1%;
                                                                                                                                                                                                                                                                                                                                                                                 3
                                                                                                                                                                                                                                                                                                                  79;
                                                                                                                                                                                                                                                                                                                                                                                         AMINATOR DOMAIN.
GLUTAMINE AMIDOTRANSFERASE.
GRUTASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                 Score 1905; DB 1;
Pred. No. 5.1e-112;
                                                                                                                                                                                                                                                                                                                                                                            5EB8769917043811
                                                                                                                                                                                                                                                                                                                  Mismatches
```

CRC64; Length Indels

4

2

240 240 120

60

```
RESULT 14
PYRG_NEIMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            유 전
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN=Z2491 / Serogroup A / Serotype 4A;

MEDINE=2022556; pubMed=10761919;

Parkhill J., Achtman M., James K.D., Bentley S.D., Churcher C.,

Klee S.R., Morelli G., Basham D., Brown D., Chillingworth T.,

Davies R.M., Davis P., Devlin K., Feltwell T., Hamlin N., Holroyd

Jagels K., Leather S., Moule S., Mungall K., Quail M.A.,

Rajandream M.A., Rutherford K.M., Simmonds M., Skelton J.,

Whitehead S., Spratt B.G., Barrell B.G.;

"Complete DNA sequence of a serogroup A strain of Neisseria

meningitidis Z2491.";

Nature 404:502-506(2000).

Nature 404:502-506(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   28-PEB-2003 (Rel. 41, Created)
28-PEB-2003 (Rel. 41, Last sequence update)
28-PEB-2003 (Rel. 41, Last annotation update)
CTP synthase (EC 6.3.4.2) (UTP--ammonia ligase)
PYRG OR NMA1742.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PYRG NEIMA
                              EMBL; AL162757; CAB84970.1;
PIR; F81798; F81798.
HAMAP; MF 01227; -; 1.
                                                                                                    This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Neisseria meningitidis (serogroup A).
Bacteria; Proteobacteria; Betaproteobacteria; Neisseriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Neisseriaceae; Neisseria.
                                                                                                                                                                                                                                                                                                     similarity).

CAPALYTIC ACTIVITY: ATP + UTP + NH(3) = ADP + phosphate + CTP.

ENZYME REGULATION: Allosterically activated by GTP, when glutamine is the substrate. Inhibited by CTP (3y similarity).

PATHWAY: Pyrimidine biosynthesis; conversion of UMP to CTP; third
                                                                                                                                                                                                                                                SUBUNIT: Homotetramer (By similarity).
SIMILARITY: Belongs to the CTP synthase family.
SIMILARITY: Contains 1 type-1 glutamine amidotransferase domain.
                                                                                                                                                                                                                                                                                                                                                                                                             FUNCTION: Catalyzes the ATP-dependent amination of UTP to either L-glutamine or ammonia as the source of nitrogen (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ARKAGG 546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QLEAAGMKFSGKSLDGRLVEIIBLPE--HPWFLACQFHPEFTSTPRNGHALFSGFVEAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GKVLASRYAREQRVPYFGICYGMQAAVVDYARHVAGLEGANSTENDRQSPHPVIALITEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GKISTVRFARENKIPYLGICLGMQSAVIBFARNVVGLEGAHSTEFLPKSPHPVIGLITEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KHKTOG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QLEDAGLVIAAKSMDDTLVEMIELPREMHPWFLACQAHPEFLSTPRDGHPLFIGFVKAAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RTTTGEVERRDBKSDLGGTWRLGLQEQRLKAGTLVRELYGRDVVGERHRHRYEFNNRYRT
IPR000991; GATase_1.
IPR004468; PyrG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (CTP synthetase).
                                                                                                                                                                                                                                                                                                                                                                                                             (By
                                                                                                                                                                                                                                                                                                                                                                                                                                CTP with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            358
```

```
PYRG NEIMB
ID PYRG N
AC Q9JYJB
AC Q9JYJB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
DT 28-FEB
CTP 897
GN PYRG Q
OS Neisse
OC Neisse
OC Neisse
OX NCBI_T
RP SEQUEN
RC STRAIN
                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               . 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local S
Matches 358
                                                                                     PYRG MEIMB STANDARD; PRT; 5
Q9JYJG R
28-FEB-2003 (Rel. 41, Created)
28-FEB-2003 (Rel. 41, Last sequence up
28-FEB-2003 (Rel. 41, Last annotation
CTP synthase (EC 6.3.4.2) (UTP--ammonia)
PYRG OR NMB1554.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
                                                  Neisseria meningitidis (serogroup B)
Bacteria; Proteobacteria; Betaprotec
Neisseriaceae; Neisseria.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TIGRPAMS; TIGR00337; PyrG; 1.
PROSITE; PS00442; GATASE TYPE I;
Pyrimidine biosynthesis; Ligase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pfam; PF00117; GATase; 1
                                     NCBI_TaxID=491;
                                                                                                                                                                                                                                                    538
                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                              541
                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  358;
                                                                                                                                                                                                                                                                                                       479
                                                                                                                                                                                                                                                                                                                                                       419
                                                                                                                                                                                                                                                                                                                                                                                                       359
                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ш
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                              ¥.
                                                                                                                                                                                                                                                                            TLEQAGLVIGGVSAGRERLVETIELPNHPWFFACQFHPEFTSNPRKGHPLFTAFVKAALN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VTEDGAETDLOLGHYERFLKTTXTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                    . 뜻
                                                                                                                                                                                                                                                                                                                                                                                                GKISTVRFARENKIPYLGICLGMQSAVIBFARNVVGLEGAHSTEFLPKSPHPVIGLITEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SAGELKTKPTOHSVKELRTIGIOPDILICRSEOPIPASBRRKIALFTNVASKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EIKRRYYESAEGKDVALIEVGGTVGDIESLPFLETIROMGVELGRDRALFIHITLVPYIK 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                      QLEAAGMKFSGKSLD-GRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVBAAAK
                                                                                                                                                                                                                                                                                                                              QTADGS VETRDESADLGGTMRLGAQEVELKAGSLAAKI YGSEH I RERHRHR YEVNNNYVP
                                                                                                                                                                                                                                                                                                                                                      MDEAGELVTRDEDSDIGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYIK 478
                                                                                                                                                                                                                                                                                                                                                                                                                                               TDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEG--TAKLKNVDAILVPGGFGERGVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DSIYECPEMLHDQGIDNIITBQLQLNVQQADLTAWXXIVHAIQNEXHTVXIAWVGXYVDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BIKRRIHEGAAGYDVAIVEIGGTVGDIESLPFLEAIROMRSQLGRNNTLFAHLSYVPYIA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VTDDGAETDLDLGHYERFIDSTWIRRNSFSTGQVYENVIAKERRGDYLGGTVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MIKFIFVIGGVVSSLGKGIAAASIAAILESRGLAVIMLKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                GKIAAVRYARENNVPYLGICLGMQIALIEYARDVAGLKGANSTEFDLKCAAPVVALIDEW
                                                                                                                                                                                                                                                                                                                                                                                                                               TESYKSLIEALKHAGVHTETDVQITFVDSESIEKNNGDVSMLKDMDAILVPGGFGSRGVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     544 AA;
                                                                                                                                                                                                                                                    539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  300
380
517
519
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 299
544
380
517
519
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      59916
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                67.98;
                                                                                             c annotation update)
(UTP--ammonia ligas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ME
                                                              Betaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    80;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AMINATOR DOMAIN.
GAUTAMINE AMIDOTRANSFERASE
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 1892.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      99376E7C6557CAP2 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1.
Glutamine amidotransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  õ
                                                                                                                             update)
                                                                                                                                                                 5<u>4</u>4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3e-111;
                                                                                                   ligase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    101;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 1;
                                                               Neisseriales
                                                                                                     (CTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                   synthetase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              544;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ω
••
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                               540
                                                                                                                                                                                                                                                                                                                                                                                                        418
                                                                                                                                                                                                                                                                                                                                                                                420
                                                                                                                                                                                                                                                                                                                                                                                                                                 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                         358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ŋ
```

STRAIN=MC58 /

Serogroup

SEQUENCE FROM N.A.

```
Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                           B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL; ALCOIR; F81070;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACT_SITE
ACT_SITE
ACT_SETE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the EUropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pfam; PF00117; GATase; 1.
TIGRPAMs; TIGR00337; PYTG; 1.
PROSITE; PS00442; GATASE TYPE I; 1.
Pyrimidine biosynthesis; Ligase; Glutamine amidotransferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Tettelin H., Saunders N.J., Heidelberg J., Jeffries A.C., Nelson K.E., Elsen J.A., Ketchum K.A., Hood D.W., Peden J.P., Dodson R.J., Nelson W.C., Gwinn M.L., DeBoy R., Peterson J.D., Hickey E.K., Haft D.H., Salzberg S.L., White O., Fleischmann R.D., Dougherty B.A., Hason T., Ciecko A., Parksey D.S., Blair E., Cittone H., Clark E.B., Cotton M.D., Utterback T.R., Khouri H., Qin H., Vamathevan J., Gill J., Scarlato V., Masignani V., Pizza M., Grandi G., Sun L., Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.; Smith H.O., Page R., Page 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TIGR; NMB1554; -.. 1.
HAMAP; MF_01227; -; 1.
InterPro; IPR000991; GATase_1.
InterPro; IPR004468; PyrG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (last) step.
-!- SUBUNIT: Homotetramer (By similarity).
-!- SIMILARITY: Belongs to the CTP synthase family.
-!- SIMILARITY: Contains 1 type-1 glutamine amidotransferase domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MC58.";
Science 287:1809-1815(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQÜENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=20175755; PubMed=10710307;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    similarity).

CATRALYTIC ACTIVITY: ATP + UTP + NH(3) = ADP + phosphate + CTP.

ENZYME REGULATION: Allosterically activated by GTP, when glutamine is the substrate. Inhibited by CTP (By similarity).

PATHWAY: Pyrimidine biosynthesis; conversion of UMP to CTP; third
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FUNCTION: Catalyzes the ATP-dependent amination of UTP to either L-glutamine or ammonia as the source of nitrogen [F
                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                    51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AE002505; AAF41908.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                       SAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDA 240
                                                                                                                                                                                                               DSIYECPEMEHDQGIDNIITEQUQLAVQQQADLTAWKKIVHAIQNPKHTVKIAMVGKYVDL
                                                 DTIYRIPLLIREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDH 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MIKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVIITKLDPYINVDPGIMSPEQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             proteome.
                                                                                                       AGGIXTKPTQHTVKEMLSIGLQPDILICRMDRTMPADERRKIALFCNVEERAIVGSYDV
                                                                                                                                                                                                                                                                                                                                VTDDGAETDLDLGHYERFIDSTMTRRNSFSTGQVYENVIAKERRGDYLGGTVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                              VTEDGASTDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                        544 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  300
380
517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              519
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           299
544
380
517
519
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          67.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 59929 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; Score 1888.5; DB 1; Length; Pred. No. 5.4e-111; 77; Mismatches 103; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AMINATOR DOMAIN.
GUUTAMINE AMIDOTRANSFERASE.
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
GATASE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 E3C67621DF52E69C CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 1: Length 544;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   <u>ω</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ξ
By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CTP with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                          240
                                                                                                                                                                                                                                                                                                                                120
                                                                                                                                                                                                                                                                                                                                                                                                                                        60
```

Š 밁 Ś ď Ş 밁

```
Ś
밁
                   S
                                             맑
                                                                                        밁
                                                                                                              S
                                                                                                                                     밁
                                                                                                                                                         Ś
                                                                                                                                                                                   В
                                                                                                                                                                                                    Ş
                                             48±
                                                                  479
                                                                                         421
                                                                                                                419
                                                                                                                                      361
                                                                                                                                                           359
                                                                                                                                                                                    301
                                                                                                                                                                                                         105
541 NK 542
                    .共
                                                              QLEAAGMKFSGKSLD-GRLVBIIELPEHPWFLACQFHPEPTSTPRNGHALFSGFVEAAAK 537
                                                                                                    MDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLK 478
                                                                                                                                                                               TLEQAGLVIGGVSAGRERLVETIELPNHPWFFACQFHPEFTSNPRKGHPLFTAFVKAALN
                                                                                         QTADGSVETRDESTDLGGTMRIGAQEVELKAGSLAAKIYGSGHIRERHRHRYEVNNNYVP
                                                                                                                                    GKIAAVRYARENNVPYLGICLGMQIALIEYARDVAGLKGANSTEFDLKCAAPVVALIDEW
                                                                                                                                                 GKISTVRFARENKIPYLGICLGMQSAVIBFARNVVGLEGAHSTEFLFKSPHFVIGLITEW
                      539
                                                                                         480
                                                                                                                                      420
                                                                                                                                                           418
                                                                                                                                                                                   360
```

Search completed: January Job time: 11.244 secs 29, 2004, 15:50:42

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OM protein - protein search,
                                                                                                                                                                                                                                                           Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
           1925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                SPTREMBL 23:*
1: sp_archea:*
2: sp_bacteria
3: sp_fungi:*
4: sp_human:*
                                                                                                                                                                                                    Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      January 29, 2004, 15:44:14; Search time 40.5492 Seconds (without alignments) 3461.979 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-941-947A-16
2788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              830525 segs,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MTKFIFITGGVVSSLGKGIA....
  GenCore version 5.1.6 Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                      sp_invertebrate:*
sp_mammal:*
sp_mac:*
sp_organe:1e:*
sp_phage:*
sp_phage:*
sp_plant:*
sp_virus:*
sp_virus:*
sp_vertebrate:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                             sp_archea:*
sp_bacteria:*
sp_fungi:*
sp_human:*
                                                                                                                                                                                                                                                                                                          sp_unclassified:*
sp_rvirus:*
sp_bacteriap:*
sp_archeap:*
                                                                                                                                                                                                    Length DB
                                              258052604 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     using sw model
Q8DC63
Q8G364
Q8G364
Q8G363
Q8G0G1
Q8CN12
Q8CN12
Q8DK77
Q8B727
Q8B733
Q8B733
Q8B733
Q8B733
Q8B733
Q8B733
                                                                                                                                                                                                     딩
                                                                                                                                                                                                                                        SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .....HALFSGFVEAAAKHKTQGTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         830525
          Q8dc63 vibrio vuln
Q8ebd9 shewanella
Q8ge64 aeromonas h
Q8d2k0 wiggleswort
Q8em53 oceanobacil
Q8g01 brucella su
Q8cm12 staphylococ
Q8ddy0 streptococc
Q8dfy0 streptococc
Q8dfy8 streptococc
Q8dfy8 streptococc
Q8e290 streptococc
Q8e291 streptococc
Q8e291 streptococc
Q8e291 streptococc
Q8e291 streptococc
Q8e291 streptococc
Q8e291 streptococc
Q8e291 streptococc
Q8e291 streptococc
Q8e395x7 biiidobactell
                                                                                                                                                                                                    Description
```

183	219.5	221	307		930.5 3	1006.5	1012	¥7.	1092.5 39.	1116.5 40.	41.	1164.5 41.	1169.5 41.	1186.5 42.	1206.5 43.	1213.5 43.	1223.5 43.	1224.5 43.	1224.5 43.	1228	1228	1237 44.	1249 44.	1251 44.	1271.5 45.	1288 46.	46.	1332 47.
								858		672		600		627		586	586	586				553	597	654	591	539	.5 591	
		n		n		5 Q9VUL1	5 Q27725	_		5 Q9XXN1	3 074638	0						11 P70303	o				10 064753		II Q922Y4			10 Q8L6Z9
	Q9ilk5 pseudomonas			m		Q9vull drosophila		Q8ilz3 plasmodium		Q9xxml caenorhabdi		ľΛ	œ	α.	giar				2	oryza	Q8rzh3 oryza sativ		064753 arabidopsis			arabidopsi	ltw8 arabidopsi	Q816z9 arabidopsis

ALIGNMENTS

ДĎ	δ.	뮍	Ş.	돲	5		ŞŞ	줖	DR	굗	Z :	Z)	묫	RC	RP	R.	õ	8	S S	80	9	DE	23	DI	3	AC	Ħ,	0 R
123 IKDRVINGSQGHDVAIVEVGGTVGDIESLPFWBAIRQLAVBIGRERAMFMHLTLVPYLAA 182	122 IKRRYYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVP	63 TEDGAETULDIGHYERFIRTKMTKRNNFTAGRVYSDVLAKERRGDYIGATIQVIPHITND 122	62 TEDGAETDLDLGHYERFLKTIMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHT	3 TNYIFVTGGVVSSLGKGIAAASLAAILEARGLKVTMMKLDEVINVDEGTMSPTQHGEVEV 62	2 TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVJ	Query Match 69.0%; Score 1925; DB 16; Length 545; Best Local Similarity 67.0%; Pred. No. 2e-125; Matches 360; Conservative 80; Mismatches 97; Indels 0; Gaps 0;	SEQUENCE	Complete proteome.	EMBL; AE016802; AAO10002.1;	Submitted (DEC-2002) to the EMBL/GenBank/DDBJ o		Chov H.R.		STRAIN=CMCP6;		Ξ		Vibrionaceae; Vibrio.			VV11578.	CTP synthase.	01-MAR-2003 (TrEMBLrel. 23, Last	01-MAR-2003 (TrEMBLrel. 23,	01-MAR-2003 (TrEMBLrel.	Q8DC63;	Q8DC63 PRELIMINARY; PRT; 545 AA.	RESULT 1 OBDC63

```
RESULT
REBHO
PRESCRIPT
OR BHO
PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR PRESCRIPT
OR P
                                     S
                                                                         문
                                                                                                        γQ
                                                                                                                                                        먉
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ğ
                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ď,
                                                                                                                                                                                                                                    Query Match
Best Local S
Matches 367
                                                                                                                                                                                                                                                                                                                                                                                                                              MEDIINE=2297686; PubMed=12368813;
Heidelberg J.F., Paulsen I.T., Nelson K.E., Gaidos E.J., Nelson W.C. Read T.D., Eisen J.A., Seshadri R., Ward N., Methe B., Clayton R.A., Meyer T., Tsapin A., Scott J., Beanam M., Brinkac L., Daugherty S., Meyer T., Dodson R.J., Durkin A.S., Haft D.H., Kolonay J.F., DeBoy R.T., Dodson R.J., Durkin A.S., Haft D.H., Kolonay J.F., Madupu R., Peterson J.D., Umayam L.A., White O., Wolf A.M., Vamathevan J., Weidnan J., Impraim M., Lee K., Berry K., Lee C., Mueller J., Khouri H., Gill J., Utterback T.R., McDonald L.A., Peldblyum T.V., Smith H.O., Venter J.C., Nealson K.H., Fraser C.M., "Genome sequence of the dissimilatory metal ion-reducing bacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-MAR-2003 (1
01-MAR-2003 (1
CTP synthase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q8EBQ9
Q8EBQ9;
01-MAR-2003
                                                                                                                                                                                                                                                                                                               Complete SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Shewanella oneidensis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRAIN-MR-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Alteromonadaceae; Shewanella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bacteria; Proteobacteria; Gammaproteobacteria; Alteromonadales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PYRG OR SO3441
                                                                                                                                                                                                                                                                                                                                                                                                                Shewanella oneidensis."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N
                                                                                                                                                                                                                                                                                                                                                                          Biotechnol. 20:1118-1123(2002).; AE015780; AAN56438.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     182
                                                                                                                                                                                                                                      367;
                                                                             63
                                                                                                                 62
                                                                                                                                                                                                                                                                                                                                                         SO3441; -
                                                                                                                                                        ω
                                                                                                                                                                                                N
                                                                                                                                                                                                                                                       Similarity
IXRRVYESABGKUVALIEVGGTVGDIESLPFLETIRQXGVELGRORALFIHLTLVPYIKS
                                                                                                                                                                                                                                                                                                                                  proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SIYKIPQLIKSQGLDDLVCARFGINAPEADLSEWEQVIYEEANPTGEVTIGMVGKYIELP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AACMKFSGKSLDGRLVEIIELPEHPWFLACQFHPBFTSTPRNGHALFSGFVBAAAKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DAYKSVNEALKHAGLKNRLSVNIKYVDSQDVETKGVEVLQGLDAILVPGGFGDRGIEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWBKVVDGLTHPTDBVSIAIVGKYVDHT
                                                                           TEDGAETDLDLGHYERFIRTKMNRRNNFTTGRIYEEVLRKERRGDYLGATIQVIPHITNA
                                                                                                TEDGAETDLDLGHYERFLKTTWTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITDS
                                                                                                                                                        TRYIPVTGGVVSSLGKGIAAASLAAILEARGLNVTIMKLDPYINVDPGTMSPTQHGEVFV
                                                                                                                                                                                TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EGNVEERTESSNLGGTMRLGSQLCHLAKGTKARELYGSDTIHERHRHRYEVNNNLRPQIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LAAKYARENKVPYLGICLGMQVALIEYARNVAGMEGAHSTEFNKDTKYPVVGLITEWVDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGEVXTKPTQHSVKELLSIGIQPDILVCRSDRMIPANERKKIALFCNVPEKAVISMXDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVABKAVISAIDAD
                                                                                                                                                                                                                                                                                                                 54.6
6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (TrEMBLrel.
(TrEMBLrel.
(TrEMBLrel.
                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY;
                                                                                                                                                                                                                                                                                                                 AA;
                                                                                                                                                                                                                                                                                                               60148 MW;
                                                                                                                                                                                                                                                       69.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 23,23
                                                                                                                                                                                                                                    69;
                                                                                                                                                                                                                                                 Score 1925;
Pred. No. 2e
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                                                                                                                                                                                                                                                                                                               4079A1DB93CF39E7 CRC64;
                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               546
                                                                                                                                                                                                                                                     5; DB 16; Length 546;
2e-125;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ã
                                                                                                                                                                                                                                    102;
                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Nelson W.C.,
                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 302
                                       181
                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   481
                                                                             122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                        62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         음 성
                                                                                          ₽
                                                                                                                                 S
                                                                                                                                                                         밁
                                                                                                                                                                                                           Q
                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                        Q
                                                                                                                                                                                                                                                                                                                                  먉
                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      皮
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  맒
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                w
```

```
멼
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q8GE64;
Q8GE64;
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.

Sha J., Galindo C.L., Pancholi V., Popov V.L., Chopra A.K.;
Sha J., Galindo C.L., Pancholi V., Popov V.L., Chopra A.K.;
"Identification of a Potentially New Virulence Gene Enolase the Differentially Expressed under in vitro versus in vivo Growth Conditions in Aeromonas hydrophila.";
Submitted (AUG-2002) to the EMBL/GenBank/DDBJ databases.

EMBL; AY141757; AAN28925.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Aeromonas hydrophila.
Bacteria; Proteobacteria;
Aeromonadaceae; Aeromonas.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-MAR-2003 (TrEMBLrel. 23, 01-MAR-2003 (TrEMBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTP synthetase (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=644;
                                                                                                                                                                                                                                                                                                                                                                                                                                      Local
                                       287
                                                                                                                                                                   121
                                                                                 181
                                                                                                                                                                                                         167
                                                                                                                                                                                                                                                                                           107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  123
                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                          47
                                                                                                                                                                                                                                                                                                                                                                                                                  326;
                                                                                                                                                                                                                                                                                                                                     \vdash
                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                     RALFIHLTLVPYIKSAGELKTKPTQHSVKELRTIGIQPDILICKSEQPIPASERRKIALF
                                                                                                                                                                   NAMFMHLTLVPYLAAAGEVKTKPTQHSVKELLSIGIQPDVLICRSDRAIPANBRAKIALF
                                                                                                                                                                                                                                                                                                                                   DPGTMSPTQHGEVFVTEDGAETDLDLGHYERFIRTKMTRRNNFTTGRIYADVLRKERRGD
                                                                                                                                                                                                                                                                           YLGATVQVIPHITDEIKRRVYBSABGKDVALIEVGGTVGDIESLPFLETIRQMGVBLGRD 166
                                                                                                                                                                                                                                                                                                                                                           DPGTMSPFQHGEVFVTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLKNERKGD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QAGLVFSGLSSDRKLVEMIELKDHPWFVAGQFHPEFTSTPRDGHPLFEGFVAAASAHQ 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITEMMDE
AEVTIGMVGKYVSLPDAYKSVNEALKHGGLKTRLSVNIKYIDSQDIETRGAELLEGLDAI
                                     DEVSIAIVGKYVDHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAI
                                                                                    CNVPERAVISMKDVDSIYKIPALLKSQNLDSYITERFGIECKEADLAEWEQVIYEEANPT
                                                                                                   TNVAEKAVISAIDADTIYRIPLILIREQGIDDLVVDQLRLDVPAADISAWEKVVDGLTHPT
                                                                                                                                                                                                                                                   YLGATIQVIPHITNAIKERVIAGAEGHQVAIVEVGGTVGDIESLPFLEAIRQLAAEVGRN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAGMKFSGKSLDGRLVBIIELPEHPWFLACQFHPBFTSTPRNGHALFSGFVBAAAKHK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EGNVEQRHEASDLGGTMRLGAQLCHLLEGSKAAQAYKGNSCVERHRHRYEVNNKYKERLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LAAKFARENYLPYFGICLGMQVALIBFARNVAGMADAHSTEPNKATPPPVVGLITEWVDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DAYKSVNBALKHAGLKNRVSVTIKYIDSQTVBAKGDEVLQGLDGILVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKLKNVDAIIVPGGFGERGVEGKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SIYKIPALLRSQGLDELVVKRFSLTCREADLSEWENVIYQEANPNGEVVIGMVGKYIELP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TIYRIPLILREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHT 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AGEVKTKPTQHSVKELASIGIAPDVLICRGDRAIPANERAKISLFCNVEERAVISLKDVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IKEKVLAGGEGHDVAIVEIGGTVGDIESLPFLESIRQLGVELGRDRTLFMHLTLVPFLGA 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  498 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (TrEMBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    55079 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                      62.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gammaproteobacteria; Aeromonadales;
                                                                                                                                                                                                                                                                                                                                                                                                                  70;
                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 1738; DB
Pred. No. 1.8e-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    D9C6FC9228FBCCE0
                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     498
                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                     97;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Chopra A.K.;
Gene Enclase that
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                          346
                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
                                                                                 240
                                                                                                                         286
                                                                                                                                                                                                         226
                                                                                                                                                                                                                                                                                                                                   60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                242
                                                                                                                                                                   180
```

487

430

```
RESULT
Q8D2K0
ID DT 0:
DT 0:
DT 0:
DT 0:
DT 0:
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C F
CR C
                                                                                  片
                                                                                                                                  Ş
                                                                                                                                                                                              8
                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            $
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          뮍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Β'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ঠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Sim
Matches 320;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q8D2K0
Q8D2K0;
O1-MAR-2003 (TrEMBLrel. 2
01-MAR-2003 (TrEMBLrel. 2
01-MAR-2003 (TrEMBLrel. 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Genome sequence of the endocellular obligate flies, wigglesworthia glossinidia."; Nat. Genet. 32:402-407(2002).
EMBL; AB063522; BAC24500.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
MEDLINE=22297718; PubMed=12219091;
Akman L., Yamashita A., Watanabe H.,
Aksoy S.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Wigglesworthia brevipalpis.
Bacteria; Proteobacteria; Gammaproteobacteria;
Enterobacteriaceae; Wigglesworthia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PyrG protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=164609;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       44
                                                                                        311
                                                                                                                                                                                                                                                 244
                                  364
                                                                                                                                           304
                                                                                                                                                                                                 251
                                                                                                                                                                                                                                                                                                       191
                                                                                                                                                                                                                                                                                                                                                       184
                                                                                                                                                                                                                                                                                                                                                                                                           131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          527
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             proteome.
552 AA;
VRFARENKI PYLGICLGMOSAVI EFARNVVGLEGAHSTEFL PKSPHPVIGLI TEMMDEAG
                                                                                  YKSLNEALIHAGIHTRHKVQISYIDSETIBAEGTAKLKNVDAILVPGGFGERGVEGKIST
                                                                                                                                                                                                                                                                                                                                    ELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAIDADTI 243
                                                                                                                                                                                                                                                                                                                                                                                                     KCIINAGKGFDILLVEIGGTVGDIESLPFLESIRQMSIEIGKNKILYIHLTLVPYLKISK 190
                                                                                                                                                                                                                                                                                                                                                                                                                                       RRVYESAEGKDVALIEVGGTVGDIESLPFLETIROMGVELGRDRALFIHLTLYPYIKSAG 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DGAETDLDLGHYERFLKTIWIKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITDBIK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPPQHGEVFVTB
                                                                                                                                                                                        YKIPILIKKOĞLDSYVCDRFCIKRPEADLSKWKEVIYKOKNPLGNVNIĞIIĞKYTELPDS
                                                                                                                                                                                                                                              YRIPLLIREQGIDDLYVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHTDA 303
                                                                                                                                                                                                                                                                                                    EVKTKPTQHSVKELLSIGIQPDILICRSEKNVSKYEKSKIALFCNVPKQAVFSLKNTNSI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DGAETDLDLGHYERFIKTKMSKKNSFTSGKIYSEVLKNERKGFYLGSTIQVIPHITNBIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       YIFITGGVVSSLGKGITAASLGSVLESRNLKVTLMKLDPYINVNPGTISPIQHGEVFVTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RHRYEPNNQYLKQLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LFAGFVKAAGEYQ 493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LFSGFVEAAAKHK 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CAYPVVGLITEWVDDEGNVETRTEKSDLGGTWRLGSQLCHLVEDSKVRQMYGSPTIYERH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SPHPVIGLITEWMDEAGELVTRDEDSDLGGTWRLGAQKCRLKADSLAFQLYQKDVITERH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LVPGGFGERGVEGKILAAQYARENKIPYLGICLGMQVAMIEFARNVAGMAGAHSSEFKKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LVPGGFGERGVEGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62336 MW; D7DC35A8FF91C568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          59.6%;
58.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      90;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 1662; DB 16;
Pred. No. 4.1e-107;
0; Mismatches 123;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Oshima
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  <u>۳</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            symbiont
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Shiba T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Hattori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ŋ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
LOS ENTERED
  Ś
                                                      밁
                                                                                                   Ś
                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                        몽
                                                                                                                                                               뫉
                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                           2
                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Sim
Matches 310;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ligase; (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN=HTB831 / DSM 14371 / JCM 11309;
MEDLINE=2220767; PubMed=12235376;
Takami H., Takaki Y., Uchyama I.;
"Genome sequence of Oceanobacillus iheyensis isolated from "Genome sequence of Oceanobacillus iheyensis isolated from Ridge and its unexpected adaptive capabilities to extreme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QBEM53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; AP004603; BAC14963.1; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
STRAIN=HTE831 / DSM 14371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01.MAR-2003 (TrEMBLrel. 23, Created)
01.MAR-2003 (TrEMBLrel. 23, Last sequence update)
01.MAR-2003 (TrEMBLrel. 23, Last sequence update)
01.MAR-2003 (TrEMBLrel. 23, Last sequence update)
CTP synthase (UTP-ammonia ligase) (EC 6.3.4.2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Nucleic Acids Res. 30:3927-3935 (2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  environments."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=182710;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Oceanobacillus iheyensis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OB300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ហ
                                                           361
                                                                                                                                                                  301
                                                                                                                                                                                                                  299
                                                                                                                                                                                                                                                                        241
                                                                                                                                                                                                                                                                                                                           239
                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 546 DFKNK 550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Complete proteome.
E 535 AA; 59550 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
     WMDBAGBIVTRDEDSDLGGIWRLGAQKCRLKADSLAFQLYQ-KDVITERHRHRYEFNNQY
                                                   DGKIEAIRYARENNIPFFGICLGMQLASVEFARNVVGLSQAHSABINPHTPHPVIDLLPB
                                                                                             EGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITE
                                                                                                                                                               ELPDAYLSVVBSLKHAGYDYDTDVKIHWINSELLSEQIKEELSKVDGVLVPGGFGDRGI
                                                                                                                                                                                              DHTDAYKSLNEALIHAGIHTRHKVQISYIDSETI-EAEGTAKLKNVDAILVPGGFGERGV
                                                                                                                                                                                                                                                                        DADTLYQVPIALQEEKLDQITCNHFGLDCPEADMEBWKGLVNKVRNLSKTTHIGLVGKYV
                                                                                                                                                                                                                                                                                                                        DADTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV
                                                                                                                                                                                                                                                                                                                                                                              IKAAGEMKTKPTQHSVKELRSLGIQPDAIVLRTEMAISKDMKEKIALFCDIDDKSVIEMR
                                                                                                                                                                                                                                                                                                                                                                                                             IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EIKDQVFRAGEATGADVVITEIGGTVGDIESLPFLEAIRQIKSDVGRDSVMYVHCTLVPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EIKRRYYESAE--GKDVALIEVGGTVGDIBSLPFLETIRQMGVBLGRDRALFIHLTLVPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MTKY1 FVTGGVVSSLGKGITAASLGRLLKNRGLSVTIQKFDPYINVDPGTMSPYQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GMKFSGKSLDG------RLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAA 536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AKYSREKKIPYFGICLGMQVALIEFARNVTGLSEANSTEFINNCKHPVIAKISBWNKSIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KHKTQ 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       --KFSGLSVSGWAYYDNHKLVEIIEYSNHPWFVGSQFHPEFNSTPRNSHPLFISFVKAAF 545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BLVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLEAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             YLNKSNISSNNYSTMRLGNQKCHLTKGSLAFKIYNNSIILERHRHRYEVNNIFIBKI---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       57.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CHYERFIDINLNKYSNITTGKVYSSVIRKERRGDYLGGTVQVIPHITN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                86;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 1614; D
Pred. No. 8.4e
86; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2EA9808ADC745EC0 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Oceanobacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4e-104;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              B
```

Indels Length

Gaps

4

60 60

420 417 357

300 298 240

360

238

178 120 120

180

535; 14,

the

δ 뭐 Ś 문

```
RESULT DREGOT OF COOR RESULT OF COOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Sim:
Matches 312;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EP SEQUENCE FROM N.A.

(C STRAIN=1330 / Biovar 1;

(C STRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q8G0G1;
Q8G0G1;
01-MAR-2003
01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PYRG OR BR1134.
Brucella suis.
Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Complete proteome. SEQUENCE 542 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=29461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Brucellaceae; Brucella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTP synthase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                531
                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ш
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ģ.
                                                                                                       SAGELKTKPTOHSVKELRTIGIQPDILICRSEQPIPASERKIALFTNVAEKAVISAIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RDÓMAEKGEVFSGTSPDGRÍVETIEVKDHÞWFVACQFHÞEFTSRÞTRAQSLFKGFIGASV 530
GKISTVRFARENKIPYLGICLGMQSAVIBFARNVVGLEGAHSTEFLPXSPHPVIGLITEW
                                                                                                                                                            HTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAK-LKNVDAILVPGGFGERGVE
                                                                                                                                                                                                                                       ATIYDVPIAYHKEGLDSEVLSAFGIDPAPKPRMDRWEEVSHRLHNPEGEVTIAVVGKYTG
                                                                                                                                                                                                                                                                                                       DTIYRIPLLLREQGLDDLVVDQLRLD-VPAADLSAWBKVVDGLTHPTDEVSIAIVGKYVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LKQLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAA 536
                                                                                                                                                                                                                                                                                                                                                                       AAGELKTKPTQHSVKELRSIGIAPDILLVRADREIPESERRKLSLFCNVRESAVIQALDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EIKNFVLEGNEDYDFVLCEIGGTVGDIBAMPFLBAIRQLGNELDRGTAVXIHLTLMPYIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EIKRRVYESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VTDDGAETDLDLGHYERFTGRPANQQDNITTGRIYRNIIEKERRGDYLGATVQVIPHVTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIFHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MARYVFITGGVVSSLGKGIAAAALAALLQARGYRVRIRKLDPYLNVDPGTISPYQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DYR 533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KHK 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (TrEMBLrel. 23, (TrEMBLrel. 23, (TrEMBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60058 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  56.9%;
58.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            - IEDIGGTLRIGAYPCKIVDGTKAKBAYDGADVIEERHRHRYEFNNVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Alphaproteobacteria; Rhizobiales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Last
Last
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 1585;
Pred. No. 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  red. No. 8.9e-102;
Mismatches 143;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      B88F10406370B7B0 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 542;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                           240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           180
                                                                                                          360
                                                                                                                                                                       358
                                                                                                                                                                                                                                          300
                                                                                                                                                                                                                                                                                                       299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           180
                                                                                                                                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF CONTROL OF C
                                                                                 5
                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q
                                                                                                                                                                                                                            5
                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                       뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  멇
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         묽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
Matches 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Complete proteome. SEQUENCE 535 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2003 (TrEMBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q8CNI2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Submitted (NOV-2002) to the EMBL/GenBank/DDBJ databases EMBL; AB016749; AA005324.1; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Chen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Staphylococcus epidermidis.
Bacteria; Firmicutes; Bacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SE1725
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Zhang Y., Ren S.,
Chen Z., Wen Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN=ATCC 12228;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TaxID=1282;
                                          471
                                                                                                       477
                                                                                                                                                                       421
                                                                                                                                                                                                                                       417
                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                                                                                                                          357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            361 GKILAAKFARERKVPYFGICFGMQMACIEAARNLVGIEDASSSEFGP-TREPVVGLMTEW 419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         302;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ш
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      بر
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                LKQLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VTEDGASTDLDLGHYBRFLKTTWTKKNNFTTGQVYBQVLRNBRKGDYLGATVQVIFHITD
                                       REQLESNGMVFSGTSPDGRLVEITEIPKNDFFIACQFHPEFLSRPNRPQPIPKSFVEAAL
                                                                                                                                                                       EQKO-----
                                                                                                                                                                                                          EWMDEAGELVTRDEDSDLGGTWRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQY
                                                                                                                                                                                                                                                                                                       SEGKIAAIRYARENNIPFFGICLGMQLATVEFARHVLGYEGAHSAELDPSTPYPIIDLLP
                                                                                                                                                                                                                                                                                                                                                                   VEGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHFVIGLIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DADTIYRIPLLLREQGLDDLVVDQLRLDVP-AADLSAWEKVVDGLTHPTDEVSIAIVGKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IKAAGEMKTKPTQHSVXELRGLGIQPDLIVVRTEYSMTQDLKDKIALFCDIKKESVIECR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BIKERLILAGESTNADVVITEIGGTTGDIESLPFLBAIRQIRSDLGRBNVMYVHCTLLPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EIKRRVYESAB--GKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPY 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VTDDGAETDLDLGHYERFIDINLNKYSNVTAGKVYSHVLKKERRGDYLGGTVQVIPHITN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MTKF1FVTGGVVSSLGKG1TAASLGRLLKDRGLKVT1QKFDPYLAVDPGTMSPYQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QLEAAGMKFSGKSLDGRLVBIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVBAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         L-KGNMLEKRAAAGDLGGTMRLGAYEAVLKPDSKIAQIYGSTDIHERHRHRYEVNIDYKD 478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYBFNNQYLK 478
                                                                                                                                                                                                                                                                                                                                                                                                                                           VSLQDAYLSVVESLKHAGYPFKKDVVVKWIDSSBVNDDNVEAYLSDVDGILVPGGFGFRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VDHTDAYKSLNBALIHAGIHTRHKVQISYIDSETIEAEGT-AKLKNVDAILVPGGFGERG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DADSLYETPLQLSKONMDDIVIORLOLNAKYETQLDEWKHLLNTVNNLDGKITIGLVGKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RLEAAGLNFAGMSPDGVLPETVEYADHPWFIGVQYHPELKSRPFEPHPLFASFIBAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             L1 H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60211 MW;
                                                                                                                                                                   ---IEDLGGTLRLGLYPCHIKEGTLAEKIYNKNDIEERHRHRYEFNNEF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      56.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Fu G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         95;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 1575; DB 16; Pred. No. 4.3e-101;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             629A03087D4AB238 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Lu L., Lu G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Staphylococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Jia J., Tu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ۲.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      535;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
```

밁 Ş 밁 Ś ₽

536

420 416 360 356 297 240

300

180

120

60 60

120

Ś ゟ δ 뭐 Ś 문 ð

음 성

OXN

X

539

```
RESULT
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
IQUOY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ś
                                                                                                            Ş
                                                                                                                                                                                       멂
                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          . 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Simi
Matches 294;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.

MEDLING=21429245; PubMed=11544234;

Hoskins J., Alborn W.E. Jr., Arnold J., Blaszczak L.C., Burgett
Hoskins J., Alborn W.E. Jr., Fritz L., Fu D.-J., Fuller W., Gering
DeHoff B.S., Estrem S.T., Fritz L., Fu D.-J., Fuller W., Gering
Gilmour R., Glass J.S., Khoja H., Kraft A.R., Lagace R.E.,
LeBlanc D.J., Lee L.N., Lefkowitz B.J., Lu J., Matsushima P.,
McAhren S.M., McHenney M., McLeaster K., Mundy C.W., Nicas T.I.
Norris F.H., O'Gara M., Peery R.B., Robertson G.T., Rockey P.,
Sun P.-M., Winkler M.E., Yang Y., Young-Bellido M., Zhao G.,
Zook C.A., Baltz R.H., Jaskunas S.R., Rosteck P.R. Jr., Skatrud
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Glass J.I.;
"Genome of the bacterium Streptococcus
J. Bacteriol. 183:5709-5717(2001).
EMBL; AE008423; AAK9242.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-MAR-2003 (TrEMBLrel. 23, Created)
01-MAR-2003 (TrEMBLrel. 23, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
CTP synthetase (EC 6.3.4.2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Streptococcus pneumoniae (strain ATCC BAA-255 / R6).
Bacteria; Firmicutes; Lactobacillales; Streptococcaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     œ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local Similarity
                                                                                                                                                                                       363
                                                                                                                                                                                                                                                    359
                                                                                                                                                                                                                                                                                                                 303
                                                                                                                                                                                                                                                                                                                                                                              300
                                                                                                                                                                                                                                                                                                                                                                                                                                           243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LKEKIKRAALTIDSDVIITEVGGTVGDIBSLPFLBALROMKADVGADNVMYIHTTLLPYL
                                                                                                                      MDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLY-QKDVITERHRHRYEFNNQYL
                                                                                                                                                                                   GKIQAIRYARENDVPMLGVCLGMQLTCIEFARHVLGLEGANSAELAPETKYPIIDIMRDQ
                                                                                                                                                                                                                        GKISTVRFARENKIPYLGICLGMQSAVIBFARNVVGLBGAHSTBFLPKSPHPVIGLITEW
                                                                                                                                                                                                                                                                                                                 LQDAYISVVBALKHSGYVNDVEVKINWVNANDVTAENVAELLSDADGIIVPGGFGQRGTB
                                                                                                                                                                                                                                                                                                                                                                              HTDAYKSLNEAL HAGIHTRHKVQISYIDSETIEAEGTAK-LKNVDAILVPGGFGERGVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALPTNVAEKAVISAID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IKRRYYESA--EGKDVALIBVGGTVGDIESLPFLETIRQMGVBLGRDRALFIHLTLVPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TEDGAETDLDLGHYERFLKTTWTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITDE 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQEGEVFV
KQLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAK
                                                                                                                                                                                                                                                                                                                                                                                                                                           VEHLYQIPLNLQAQGMDQIVCDHLKLDAPAADMTEWSAMVDKVMNLKKQVKISLVGKYVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ADTIYRIPLLIREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KAAGEMKTKPTOHSVKELRGLGTOPNMLVIRTEEPAGOGIKNKLAQFCDVAPEAVIESLD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TODGAETDLDLGHYERFIDINLNKYSNVTTCKIYSEVLRKERRGEYLGATVQVIPHITDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TKYIPVTGGVVSSIGKGIVAASLGRLLKNRGLKVTIQKFDPYINIDPGTMSPYQHGEVFV
                                                             ID-----IEDMGGTLRLGLYPSKLKRGSKAAAAYHNQEVVQRRHRHRYEFNNAFR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        535 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       56.0%; Score 1561; DB 16; ilarity 54.3%; Pred. No. 4.1e-100; Conservative 108; Mismatches 125;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     59256 MW; 7BC6C2C67AF74C12 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               pneumoniae strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Blaszczak L.C., Burgett S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Skatrud
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Geringer C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               P.L.,
                                                                                                                                                                                                                                                418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   179
                                                                                                                                                                                                                                                                                                                 362
                                                                                                                                                                                                                                                                                                                                                                              358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      182
                                                                                                                                                                                                                                                                                                                                                                                                                                           302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62
```

```
RESULT
ID MIT
ID
                                                                                       8
                                                                                                                                           Ś
                                                                                                                                                                                                          믕
                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                    먉
                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                    맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S
Matches 310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE-2225144; PubMed=12240834;
Nakamura Y., Kaneko T., Sato S., Ikeuchi M., Katoh H., Sasamott Nakamura Y., Kaneko T., Sato S., Kimura T., Kishida Y., Watanabe A., Iriguchi M., Kawashima K., Kimura T., Kishida Y., Kiyokawa C., Kohara M., Matsumoto M., Natsuno A., Nakazaki N., Shimpo S., Sugimoto M., Takeuchi C., Yamada M., Tabata S., "Complete genome structure of the thermophilic cyanobacterium Thermosynechococcus elongatus BP-1.";
DNA Res. 9:123-130(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Complete proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Synechococcus elongatus 
Bacteria; Cyanobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-MAR-2003 (TrEMBLrel.
01-MAR-2003 (TrEMBLrel.
01-MAR-2003 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QBDKIT7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QBDKT7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=32046;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PYRG OR TLL0768
                                                                                             421
                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                              358
                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           533 N 533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              al Similarity
310; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  es. 9:123-130(2002).
AP005371; BAC08319.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
KQLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPESTSTFRWGHALFSGFVEAAAX 537
                                                                                                                                                                                                                                                                                                                                                            DHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIBAEGT-AKLKNVDAILVPGGFGERGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BIKRRVYESABGK--DVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPY 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VTEDGAETDLDLGHYERFIKTIWTKKNNFTTGQVYEQVIRNERKGDYLGATVQVI PHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               н
                                                                                                                                                                                                                                                     EGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITE
                                                                                                                                                                                                                                                                                                                                                                                                                                 DAKSIYEVPLLLEREGLATQVLNLLNLEQRQPDLSQWQALVERLYGSHRPLEVAIVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IKSAGELKTKPTQHSVKBLRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VIDDGAETDLDLGHYERFTDTPMSRLNSVTTGSIYQAVINKERRGDYMGGTVQVIPHITN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MTKYVFVTGGVVSS1GKGIVAASLGRLLKSRQYSVS1LKLDPY1NVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EQFEAAGFVFSGVSDDNRLVEIVEIDENKFFVACQYHPELSSRPNRPEELYTAFVTAAVE
                                                                                                                                                                                                       EGKIAAIQYAREQGIPFLGLCLGWCAVIEWARHIAGLENANSABFDANTPHFVIHLLPB
                                                                                                                                                                                                                                                                                                                    RLSDAYLSVVEALRHSAIALDQELRIRWVNSEELVENGVETALSNVGAIVVPGGFGIRGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DADTIYRIPELLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    I PSAGEMKTKPTQHSVKELRSIGIQPDILICRCDRPLVPGIKEKLSQFCDVPVECVIPSP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EIKERILRVAKDKNPDVVIIEIGGTVGDIESLPFLEAIRQFRTEVGRHHVLFMHVTLVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              543 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              55.8%; Score 1555.5; D [larity 57.0%; Pred. No. 1e-99; Conservative 80; Mismatches 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60484 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          223,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (Thermosynechococcus elongatus) Chroococcales; Synechococcus.
                                                                                             DIGGTMRIGLYACRIAPHSLAEKLYGETVIYERHRHRYEFNNAYR 470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0884DA82309EFE40 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 141;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sasamoto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        543;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                          420
                                                                                                                                                                                                                                                                 417
                                                                                                                                                                                                                                                                                                                                                                                 357
                                                                                                                                                                                                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60
                                                                                                                                                                                                                                                                                                                          360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              532
```

```
RESULT
OBETTO
BETTO
                                                                               맑
                                                                                                                    Ś
                                                                                                                                                                                  밁
                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               뜅
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local S
Matches 288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q8E7P8;
Q8E7P8;
01-MAR-2003
01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SagaList; gbs0106; -.
Hypothetical protein; Complete
SEQUENCE 534 AA; 59294 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Glaser P.,
Msadek T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN=NEM316 / Serotype III;
MEDLINE=22242508; PubMed=12354221;
Glaser P., Rusniok C., Buchrieser C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A. STRAIN=NEM316 / Se
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Streptococcus agalactiae (serotype III)
Bacteria; Firmicutes; Lactobacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Hypothetical GBS0106.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              invasive neonatal disease.";
Mol. Microbiol. 45:1499-1513(2002)
EMBL; AL766843; CAD45751.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Streptococcus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Genome sequence of Streptococcus agalactiae,
                                                                                   421
                                                                                                                                 418
                                                                                                                                                                                    361
                                                                                                                                                                                                                                     358
                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                      299
                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TaxID=216495;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       288;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    j.,1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ALKEKIKRAATTTDSDVIITEVGGTVGDIESLPFLEALRQMKADVGSDNVXIHTTLLPY
                             LKQLBAAGMKFSGKSLDGRLVEIIBLPEHPWFLACQFHPSFTSTPRNGHALFSGFVEAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MTKFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                                                                                                                              WMDEAGELVTRDEDSDLGGTWRLGAQKCRLKADSLAFQLY-QKDVITERHRHRYEFNNQY
                                                                                                                                                                                                                                                                                ELPDAYLSVVEALKHSGYVNDVAIDLKWVNAAEVTEDNIKELVGDADGIIVPGGFGQRGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALPTNVAEKAVISAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EIKRRVYESA--EGKDVALIEVGGTVGDIESLPPLETIRQMGVELGRDRALFIHLTLVPY
                                                                                                                                                                                  EGKIEAIRYARENDVEMLGVCLGMQLTCVEFARNVLKLHGANSAELDFKTPFFIIDIMRD
                                                                                                                                                                                                                  SGKISTVRFARENKIPYLGICLGMQSAVIBFARNVVGLEGAHSTEFLPKSPHPVIGLITE
                                                                                                                                                                                                                                                                                                                                 DHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIBAEGTAKL-KNVDAILVPGGFGERGV
                                                                                                                                                                                                                                                                                                                                                                                    DVDHIYQIPLNMQAQNXDQIVCDHLKLETPAADMTEWSAMVDKVMNLEKKVKIALVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                    DADTIYRIPLLKEQGLDDLVVDQLKLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LKAAGEMKTKPTOHSVKELRGLGIOPNMLVTRTEQPAGQSIKNKLAQPCDVAPEAVIESL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VTDDGAETDLDLGHYERFIDINLNKYSNYTTGKIYSEVLKKERRGEYLGATVQVIPHYTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NSNR 534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NLFLETGYQITGTSPDGRLVEIIEYPAHPFFIAVQFHPEFRSRPNAPHPLFYGLLAAAAK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Zouine M., Couve E., Lalioui
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (TrEMBLrel.
(TrEMBLrel.
(TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein
55.0%;
53.1%;
                                                                              -IEDMGGTLRLGLYPCKLKAGSRAAAAYNNQEVVQRRHRHRYEFNTKF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      23,23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    108;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 1533;
Pred. No. 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   proteome.
0CE1CC88511EDB55 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Chevalier F.,
  ::
::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Streptococcaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; DB 16;
3.6e-98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Poyart
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a pathogen causing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .
C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Frangeul L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Trieu-Cuot
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 14;
     ::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .
.
                                                                                                                                                                                                                                  417
                                                                                                                                                                                                                                                                                   360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                       298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT ORSE290 AC ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE290 ORSE
                                                              Ś
                                                                                                                              문
                                                                                                                                                                         Q
                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                        Q
                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                  ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                             361
                                                                           358
                                                                                                                              301
                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                   239
                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                    179
                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             287;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         \vdash
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      짇 ::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              至
```

```
Q8E290 PRELIMINARY;
Q8E290;
01-MAR-2003 (TrEMBLrel. 2
01-MAR-2003 (TrEMBLrel. 2
01-MAR-2003 (TrEMBLrel. 2
CTP synthase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE-2222988; PubMed=12200547;
Tettelin H., Masignani V., Cieslewicz M.J., Eisen J.A., Peterson S. Wessels M.R., Paulsen I.T., Nelson K.E., Margarit I., Read T.D., Massels M.R., Paulsen I.T., Nelson K.E., Margarit I., Bead T.D., Madoff L.C., Wolf A.M., Beanan M.J., Brinkac L.M., Daugherty S.C., Deboy R.T., Durkin A.S., Kolonsy J.F., Madupu R., Lewis M.R., Radune D., Fedorova N.B., Scanlan D., Khouri H., Mulligan S., Radune D., Fedorova N.B., Scanlan D., Khouri H., Mulligan S., Carty H.A., Cline R.T., Van Aken S.E., Gill J., Scarselli M., Mora Iacobini E.T., Brettoni C., Galli G., Mariani M., Vegni F., Maione Rinaudo D., Rappuoli R., Telford J.L., Kasper D.L., Grandi G., Fraser C.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Complete genome sequence and comparative genomic analysis of an emerging human pathogen, serotype V Streptococcus agalactiae."; Proc. Natl. Acad. Sci. U.S.A. 99:12391-12396(2002). EMBL; AE014196; AAM99015.1; -.
TIGR; SAG0107; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Streptococcus agalactiae (serotype V).
Bacteria: Firmicutes; Lactobaciliales; Streptococcaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Complete proteome. SEQUENCE 534 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
STRAIN=2603 V/R /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PYRG OR SAG0107.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 _TaxID=216466;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                             ALKEKIKRAATTIDSDVIITEVGGTVGDIBSLPFLEALROMKADVGSDNVMYIHTTLLPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VTEDGAETDLDLGHYERFLKTTMTXKNNFTTGQVYEQVLRNERKGDYLGATVQVIPHITD
                                                EGKISTVRFARENKIPYLGICLGYQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITE
                                                                                                   ELPDAYLSVVEALKHSGYVNDVAIDLKWVNAAEVTEDNIKELVGDADGIIVPGGFGQRGS
                                                                                                                             DHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEGTAKL-KNVDAILVPGGFGERGV
                                                                                                                                                                                                                                                             DADTIYRIPLLLREQGLIDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV
                                                                                                                                                                                                                                                                                                                   LKAAGEMKTKPTOHSVKELRGLGIQPNMLVIRTEQPAGQSIKNKLAQPCDVAPEAVIESL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EIKRRVYESA--EGKDVALIEVGGTVGDIESLPFLETIROMGVELGRDRALFIHLTLVPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MTKYIFVTGGVVSSIGKGIVAASLGRLLKURGLKVTIQKFDPYINIDPGTMSPYQHGEVY
                                                                                                                                                                                                                DVDHIYQIƏLNMQAQNMDQIVCDHLKLETPAADMTEWSAMVDKVMNLEKKVKIALVGKYV
                                                                                                                                                                                                                                                                                                                                                        IKSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MTKF1F1TGGVVSSLGKG1AASSLAA1LEDRGLKVT1TKLDPY1NVDPGTMSPFQHGEVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VTDDGAETDLDLGHYERFIDINLNKYSNVTTGKIYSEVLKKERRGEYLGATVQVIPHVTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REQFEAAGEVFSGVSPDNRLMEVVELPEKKFFVAAQYHPELQSRPNHAEELYTAFVTAAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             59296 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                54.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      109;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 1532; DB 16
Pred. No. 4.2e-98;
)9; Mismatches 132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Last sequence update)
Last annotation update
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             542AD55C132CC870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      132; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          © 3
420
                                                417
                                                                                                                                                            357
                                                                                                                                                                                                                                                                                                                   240
                                                                                                                                                                                                                                                                                                                                                                       238
                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          530
```

```
Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2003 (TrEMBLrel. 23,
CTP synthase (EC 6.3.4.2).
PYRG OR LA2409.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; AE011408; AAN49608.1; -. Ligase; Complete proteome. SEQUENCE 542 AA; 61024 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted (MAR-2002) to the EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
STRAIN=56601 / Ser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Leptospira interrogans. Bacteria; Spirochaetes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ren
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q8F3J3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q8F3J3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NCBI_TaxID=173;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .
.
  478
                                             478
                                                                                     428
                                                                                                                                  418
                                                                                                                                                                             368
                                                                                                                                                                                                                       358
                                                                                                                                                                                                                                                                    308
                                                                                                                                                                                                                                                                                                               299
                                                                                                                                                                                                                                                                                                                                                          248
                                                                                                                                                                                                                                                                                                                                                                                                    240
                                                                                                                                                                                                                                                                                                                                                                                                                                                 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                  KQLEAAGMKFSGKSLDGRLVEIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAAK 537
                                                                                   WMDEAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQYL
-----QNDIEQMGGTMRLGSYPCKVKENTLSYSEYKSILIHERHRHRFEFTNRYR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TKF1F1TGGVVSSLGKGIAASSLAAILEDRGLKVT1TKLDPY1NVDPGTMSPFQHGEVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REQFEAAGFVESGVSPDNRLMEVVELPEKKFFVAAQYHPELQSRPNHABELYTAFVTAAV
                                                                                                                                                                          EGKILAIQYARTNGIPFLGICLGMQCAVVEYGRNVLGLKDANSTEIRPDTEHPVISLLEB
                                                                                                                                                                                                  BGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLFKSPHPVIGLITE
                                                                                                                                                                                                                                                                  SLQDAYRSIYESLSHGGIAHDTKVEFIKVDPENLNKDSYVEILKKVHGILVPGGFGDRGI
                                                                                                                                                                                                                                                                                                          DHTDAYKSLMEALIHAGIHTRHKVQISYIDSETIBAEGTAK-LKNVDAILVPGGFGERGV 357
                                                                                                                                                                                                                                                                                                                                                                                                  ADT-IYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                 TAAGEAKTKETQHSVKELLGLGIQPDILVCRVSQPMTKEMKNKLSLFCNVKEENVISASD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IRNRMYIVAREENPDFIIVEIGGTVGDIBSIPFLEAIROMRYEHGSSNVLFVHLTLVPTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IKRRVYESA--EGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TKFIFVTGGVSSSLGKGVTVAALGCLLESRGYTVSLQKMDPYINIDPGTMSPYQHGEVYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          꿆
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LKQLEAAGMKFSGKSLDGRLVEIIBLPEHPWFLACQFHPEFTSTPRNGHALFSGFVEAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QID----
KQYEENGMI IAGTS PODNÍVEÍVEI PKHNWFIGVQFHPEFQSKPTLPHPLFAGFIRASVK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WMDEAGELVIRDEDSDIGGTMRIGAQKCRLKADSLAFQLY-QKDVITERHRHRYEFNNQY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  53
8
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Serogroup
                                                                                                                                                                                                                                                                                                                                                       !PKYYKEEKLDEVVLKTMGMELRESNFSEWDKMVKGLLTTKQTVQIAVVGKYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----IBDMGGTLRLGLYPCKLKSGSRAAAAYNNQEVVQRRHRHRYBENTKF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61024 MW; 80BF9D8BFB64AF8A CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      54.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Spirochaetales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Icterohaemorrhagiae / Serovar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              99;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 1532; DB 16
Pred. No. 4.3e-98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches 141; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Leptospiraceae; Leptospira.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Đ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                    367
                                                                                                                                                                                                                                                                                                                                                                                                                                             247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  179
                                                                                                                                477
                                                                                                                                                                          427
                                                                                                                                                                                                                     417
                                                                                                                                                                                                                                                                                                                                                                                                  298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             530
                                                                                                                                                                                                                                                                                                                                                       307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               476
                     몽
                                                           δ
                                                                                                        맑
                                                                                                                                           S
                                                                                                                                                                                           맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                     맒
                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SO ENTRE REPORT OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               믾
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local S
Matches 288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRAIN=UA189 / ATCC 700610 / Serotype C;

MEDLLNME=22295063; PubMed=12397186;

Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,

Ajdic D., McShan W.M., McLaughlin R.E., Savic G., Chang J.,

Carson M.B., Primeaux C., Tian R., Kenton S., Jia H., Lin S.,

Li S., Zhu H., Najar F., Lai H., White J., Roe B.A., Ferretti

"Genome sequence of Streptococcus mutans UA159, a cariogenic c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Proc. Natl Acad. Sci. U.S.A. 99:14434-14439(2002)
EMBL; AE01466; AAN57880.1; -.
Ligase; Lyase; Complete proceome.
SEQUENCE 536 AA; 59491 MW; 1512BADCEDBF8448 CR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Streptococcus mutans. Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2003 (TrEMBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Genome sequence pathogen.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=1309;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTP synthetase (UTP-ammonia PYRG OR SMU.97.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QBDWG1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q8DWG1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          13
                     471
                                                                477
                                                                                                        421
                                                                                                                                                       418
                                                                                                                                                                                                  361
                                                                                                                                                                                                                                          358
                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                  299
                                                                                                                                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                                                                                                                          239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 al Similarity
288; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ы
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    <u>بــ</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MTXFIFITGGVVSSLGKGIAASSLAAILEDRGLKVTITKLDPYINVDPGTMSPFQHGEVF
                     ROOFEEAGFVESGVSPDNRLVEVVELSDKKFFVAAQYHPELQSRPNRPEELYTAFITAAV
                                                    LKQLEAAGMKFSGKSLDGRLVBIIELPEHPWFLACQFHPEFTSTPRNGHALFSGFVBAAA
                                                                                                                                       WMDEAGELVTRDEDSDLGGTMRLGAQXCRLKADSLAFQLY-QXDVITERHRHRYEFNNQY 476
                                                                                                                                                                                                                       BGKISTVRFARENKIFYLGICLGMQSAVIEFARNVVGLEGAHSTBFLFKSFHFVIGLITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EIKRRYYESA--EGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPY 178
                                                                                                        QID-----IEDMGGTLRLGLYPCKLKSGSKTASAYSNQEVVQRRHRHRYEFNNAF
                                                                                                                                                                                                                                                                                                                                                                               DVDHLYQIPLNLQAQNMDQIVCDHLKLDVPVADMTEWSAMVDKVMNLKKKTKIALVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                  DADTIYRIPLLLREQGLDDLVVDQLRLDVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IKSAGELKTKPTOHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVABKAVISAI 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ALKEKIKRAATTTDSDVIITEVGGTVGDIESLPFLEALROMKADVGADNVMYIHTTLLPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VTBDGABTDLDLGHYERFLKTTMTKKKNFTTTGQVYEQVLRNERKGDYLGATVQVI PHI TD
                                                                                                                                                                                                BGKIEAIRYARENDVPMLGI
                                                                                                                                                                                                                                                                                       BLPDAYLS VVEALKHSGYVNDTAIDLNWINANEVTPETVTDLLGDADG I I VPGGFGHRGT
                                                                                                                                                                                                                                                                                                                                DHTDAYKSLNEALIHAGIHTRHKVQISYIDSETIEAEG-TAKLKNVDAILVPGGFGERGV 357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VTDDGAETDLDLGHYERFIDINLNKYSNVTTGKIYSEVLRKERKGEYLGATVQVIPHITD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               YSKKG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HKT OG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            54.3%; Score 1514; DB 16; 53.1%; Pred. No. 7.6e-97; 53.1% Pred. Mismatches 138;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Lactobacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Last sequence update)
Last annotation update)
lyase (EC 6.3.4.2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
                                                                                                                                                                                                1512BADCEDBF8448 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Streptococcaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ጅ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      dental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qian
J.J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
```

Q

530

470

417

360

300

420

240

180

120

60 60

日 Ş 문 δ В Ş 맑 Ś 밁

ð

밁 Ś 문

S 닭 S AC DE PRODUCTION OF THE PRODUC

5

밁

S

日

맒

음 경

531

532

2: 空

```
Q853VIT 14
Q865X
ID Q865X
AC Q865X
AC Q865X
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 01-M2
DI 0
                                    S
                                                                                                     뫉
                                                                                                                                          5
                                                                                                                                                                                             B
                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                         ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       . B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ર્ફ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ם
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q8G5X7;
01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Complete proteome. SEQUENCE 553 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "The genome sequence of Bifidobacterium longum reflects to the human gastrointestinal tract.";
Proc. Natl. Acad. Sci. U.S.A. 99:14422-14427(2002).
EMBL; AE014709; AAN24687.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Schell M.A., Karmirantzou M., Snel B., Vilanov Pessi G., Zwahlen M.-C., Desiere F., Bork P., Pridmore R.D., Arigoni F.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bifidobacterium longum.
Bacteria; Actinobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A. STRAIN=NCC 2705;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bifidobacteriaceae;
NCBI_TaxID=216816;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q8G5X7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=22294977; PubMed=12381787;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PYRG OR BL0874.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CTP synthase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-MAR-2003
                                                                                                     433
                                                                                                                                                        418
                                                                                                                                                                                                           373
                                                                                                                                                                                                                                                                 358
                                                                                                                                                                                                                                                                                                                    313
                                                                                                                                                                                                                                                                                                                                                                       300
                                                                                                                                                                                                                                                                                                                                                                                                                            253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            μ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SAAHELKTKPTQHSVMMLRQLGISPDALVLRSDRPLNQSIKDKISLMCDVDABGVVNCVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EIKRRV-YESAEGKDVALIEVGGTVGDIESLPFLETIRQMGVELGRDRALFIHLTLVPYI 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VTEDGAETDLDLGHYERFLKTTMTKKNNFTTGQVYEQVLKNERKGDYLGATVQVIPHITD
                                                                                                                                    WMD-EAGELVTRDEDSDLGGTMRLGAQKCRLKADSLAFQLYQKDVITERHRHRYEFNNQY
                                                                                                                                                                                                           SKIGALKFARETKLPALGLCLGLQSMVIEYSRHVLGIEDANSSEFEPDCANPVIATMEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADTIYRIPLILREQGIDDLYVDQLRLDVPAADLSAWEKVVDGITHPTDEVSIAIVGKYVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EIKSRMRAQASDDVDVIITEIGGTVGDIESQPFLEAAREVRRDLGPDNCMFVHVSLVPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VTKHIFVTGGVVSSLGKGLTASSLGRLLRSRGIHVLQQKLDPYINVDPGTMNPFQHGEVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MTKF1F1TGGVVSSLGKG1AASSLAA1LEDRGLKVT1TKLDPY1NVDPGTMSPFQHGEVF
                                             LKQLEAAGMKFSGKSLDGRLVEIIELPE--HPWFLACQFHPEFTSTPRNGHALFSGFVEA 534
                                                                                                                                                                                                                                                              EGKISTVRFARENKIPYLGICLGMQSAVIEFARNVVGLEGAHSTEFLPKSPHPVIGLITE
                                                                                                                                                                                                                                                                                                                 LPDAYLSVTEAIKAGGFANWAKVNVKWVAADRCETTEGAAAALDNVDGIVIPGGFGIRGI
                                                                                                                                                                                                                                                                                                                                                                 HTDAYKSLNEALIHAGIHTRHKVQISYIDSETIE-AEG-TAKLKNVDAILVPGGFGERGV 357
                                                                                                                                                                                                                                                                                                                                                                                                                            APSIYDVPKILFEEGLDAYVVRBLGLPFHDVDWDEWADLLERVHHPKHEVNIAIVGKYID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KSAGELKTKPTQHSVKELRTIGIQPDILICRSEQPIPASERRKIALFTNVAEKAVISAID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VTEDGAETDLDIGHYERFLDVFLSQKANVTTGQIYQEVLRKERAGEYLGQCVQVIPHITN
KDRLREGGLR I SGQSPDGELTEFVELPQDVHPFYVATQAHPEFKSRPTKPHPLFAGLVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (Tramblrel.) (Tramblrel.) (Tramblrel.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          60983 XW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    teria; Actinobacteridae;
Bifidobacterium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           51.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      23,
                                                                                                     -GOMGHTMRIGSYPAELEEGSLVAELYGTTHVTERHRHRYEVNVAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  97;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 1432.5; DB 16; Length Pred. No. 3.7e-91;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8C8EA4ABEECF48C0 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Vilanova D., E
ork P., Delley
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               150; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bifidobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Berger
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     553;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                           432
                                                                                                                                                                                                                                                                 417
                                                                                                                                                                                                                                                                                                                                                                                                                            312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            60
```

```
PRESULT RESULT RESULT REPORT RESULT REPORT R
                                                                                                       片
                                                                                                                                                     S
     붕
                                              δ
                                                                                                                                                                                                                  B
                                                                                                                                                                                                                                                          5
                                                                                                                                                                                                                                                                                                                         吊
                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-MAR-2003 (TrEMBLrel. 23, Created)
01-MAR-2003 (TrEMBLrel. 23, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
CTP synthase (EC 6.3.4.2) (Fragment)
Heliobacillus mobilis.
Bacteria; Firmicutes; Clostridia; Clostridiales; Heliobacteriaceae;
Heliobacillus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q8GDZ6
Q8GDZ6;
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ligase.
NON TER
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Liolios K.G., Chu I., Ostrovskaya O., Mendybaeva N., Koukharenko Gerdes S., Kyrpides N., Overbeek R.; Submitted (AUG-2002) to the EMBL/GenBank/DDBJ databases.

EMBL; AY142825; AAN87429.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Raymond J., Zhaxybayeva O., Gogarten J.P. Blankenship R.E.;
"Whole-genome analysis of photosynthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A. MEDLINB=22337798; PubMed=12446909;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=28064;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Science 298:1616-1620(2002).
                                                                                                             361
                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                        326
                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CRLKADSLAFQLYQKDVITERHRHRYEFNNQYLKQLEAAGMKFSGKSLDGRLVEIIEL
                                                                                                                                                     VIEPARNVVGLEGAHSTEFLEKSPHPVIGLITEWMDEAGELVTRDEDSDLGGTMRLGAQK 444
                                                                                                                                                                                                                                                                YIDSETIE-AEGTAKLKNVDAILVPGGFGERGVEGKISTVRFARENKIPYLGICLGMQSA
                                                                                                                                                                                                                                                                                                                TCGEPDLKDWEALVHKIKNPKQQVTIGLVGKYVALPDAYMSVAESLRHAGIHHNASVKIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ILICRSEQPIPASERRKIALFTNVAEKAVISAIDADTIYRIPLLLREQGLDDLVVDQLRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DIESLPFLEAIRQMXSDVGRDRVIYIHVTLMPFISAAGELKTKPTQHSVKELRSIGIQPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DIESLPFLETIRQMGVELGRDRALPIHLTLVPYIKSAGELKTKPTQHSVKELRTIGIQPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NFTTGQVYEQVLRNERKGDYLGATVQVIPHITDEIKRRVYESA--EGKDVALIEVGGTVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ALDHO
                                                                                                             VVEYGRMVLGWEDANSSEFSETTTHPVIDLLPEQKDV-
                                                                                                                                                                                                                    WIYSADLEGAPPEDFLSDVDGILVPGGFGDRGIEGKISALRYARENKIPLLGICLGMQLA
                                                                                                                                                                                                                                                                                                                                                                                DVPAADLSAWEKVVDGLTHPTDEVSIAIVGKYVDHTDAYKSLNBALIHAGIHTRHKVQIS
                                                                                                                                                                                                                                                                                                                                                                                                                                    IIVCRTEXAFPOELESKIALFCDIDPAAVIOMVDAETIYEVPLLLKKEELDDIVISKLKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NVTTGKIYWSVISKERKGEYLGGTVQVIPHITNEIKERVLRVARESSPDVVITEIGGTVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MSSRGLKVCIQKFDPYINIDPGTMSPYQHGEVFVTDDGAETDLDLGHYBRFVDVNLSKAS
CRVNKGTKTWDAYQDEVIYERHRHRYEFNNNYREAI EKAGMIISGTSPDGRLVEVVEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  468 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  468
52317 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 50.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     73;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 1416.5; DB 2;
Pred. No. 3.7e-90;
'3; Mismatches 116;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gogarten J.P.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     51E548CCB7D98AA5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             468
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           prokaryotes. "
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gerdes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          116; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Y .S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                             BEKGGTWRLGIWA 410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ۲.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                               300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            145
                                                                                                                                                                                                                                                                                                                                                                                                                                      240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             سا
--
```

Search completed: January Job time: 42.5492 secs

29,

15:54:12

Copyright

GenCore version 5.1.6 (c) 1993 - 2004 Compugen Ltd.

(p)

```
Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               seq length: 0 seq length: 20000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   January 29, 2004, 15:40:33; Search time 29.0679 Seconds {without alignments} 1736.455 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-941-947A-18
1623
1 MQIVLANPRGFCAGVDRAIE......GIEEKVVFSIPKELKKHMQA 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1107863 segs, 158726573 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Geneseq 19Jun03:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1980.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1981.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1982.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1984.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1985.DAT:*
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA199.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA299.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA2000.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA2001.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA2002.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA2002.DAT:
/SIDSI/gcgdata/geneseq/geneseqp-embl/AA2002.DAT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1986.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1987.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1988.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1107863
```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

OS.
3
'n
ΕS

Result No.			Length	DB	ID	Description
,	1623		318	23	AAE22307	Methylomonas 16a s
N	1623	100.0	318	23	AAU80334	Methylomonas 16a O
ω	996	61.4	316	24	ABP60423	Escherichia coli L
4	975	60.1	322	24	ABP77632	N. gonorrhoeae ami
տ	969.5	59.7	349	20	AAY29260	Amino acid sequenc
σı	777	47.9	350	22	AAU58857	Propionibacterium
7	755	46.5	325	22	AAG90889	C glutamicum prote
œ	755	46.5	325	22	AAB78920	C. glutamicum SRT
φ	743.5	45.8	329	22	AAG81220	Mycobacterium tube

WPI; 2002-351711/38. N-PSDB; AAD35505.

Brzostowicz PC, Cheng Q, Odom JM, Picataggio SK,

Dicosimo DJ, Rouviere PE;

Koffas M,

Miller ES

(DUPO) DU PONT DE NEMOURS & CO E I.

4 . 5	44	43	4	41	40	39	38	37	36	5	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	1 B	17	16	5	14	<u>1</u> 3	12	11	10
103	103	103	103	103	104	104	104	104.5	108.5	109	110	112	115	115	w	194.5	230	244.5	259.5	300	300	300	300	300	300	305	4	598.5	3	657	658	663	663	663	733
φ. ω	6.3	6.3	6.3	6.3	6.4	6.4	6.4	6.4	6.7	6.7	ი. 8		7.1		11.9	12.0	14.2	15.1	16.0	18.5	18.5	18.5	18.5	18.5	18.5	18.8	27.3	36.9	•	٠	4 <u>0</u> .5	Ö	40.9	40.9	45.2
968	586	586	553	433	545	494	488	539	544	578	500	1033	2458	1466	182	192	452	197	146	466	466	414	414	380	380	464	331	539	293	307	352	310	310	310	335
22	20	18	23	22	20	23	22	22	12	23	23	23	22	22	18	18	23	23	22	21	21	21	21	21	21	21	23	23	22	20	23	23	23	N 0	22
AAU61465	AAW73895	AAW26665	ABP73501	AAU35014	AAY23930	ABP40179	AAG82607	AAG81848	AAR13337	AAG81233	ABB48818	ABP66122	ABG24622	ABG18175	AAW20153	AAW20838	ABP99369	ABU51526	ABG13839	AAG37999	AAG26261	AAG38000	AAG26262	AAG38001	AAG26263	AAY15159	ABB47969	AAM51849	AAU67955	AAY37259	ABP66088	AAU09434	ABP62010	AAY35672	AAG81137
Propionibacterium	Yeast MEC3 protein	Yeast checkpoint c	Ca	Enterococcus faeca		taphylococcus	epidermidis	idermidis		Mycobacterium tube	Listeria monocytog	O	Novel human diagno		H. pylori inner me	H. pylori inner me	Arabidopsis thalia	Helicobacter pylor							Arabidopsis thalia	A. palaestina LYTB		P falciparum isopr	Propionibacterium	Amino acid sequenc	Bifidobacterium lo		C. pneumoniae BVH-	_	Mycobacterium tube

ALIGNMENTS

```
RESULT 1
AAB22307
ID AAB2
                                                                                01-SEP-2000; 2000US-229858P.
01-SEP-2000; 2000US-229907P.
                                                                                                                                                                                                  Carotenoid; isopentenyl pyrophosphate; antheraxanthin; astaxanthin; diet; anti-oxidant; steroid; flavour; fragrance; electro-optic application; aquaculture; enzyme; dimethylallyl diphosphate; lytB.
                                                                                                               04-SEP-2001; 2001WO-US27420.
                                                                                                                                      07-MAR-2002.
                                                                                                                                                                               Methylomonas 16a sp.
                                                                                                                                                                                                                                                                                                          AAE22307 standard; Protein; 318 AA.
                                                                                                                                                          WO200218617-A2.
                                                                                                                                                                                                                                            Methylomonas 16a sp. dimethylallyl diphosphate (lytB) enzyme
                                                                                                                                                                                                                                                                  25-JUL-2002 (first entry)
                                                                                                                                                                                                                                                                                         AAE22307;
```

```
RESULT 2
AAUB0334
ID AAUB
XX AAUB
AC AAUB
AC AAUB
XX IS-J
XX Meth
XX ISOE
KW Kera
KW Lyte
KW Lyte
XX Lyte
XX Meth
XX Wo21
XX Meth
XX Wo21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ঠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ϋ́
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local
                      WO200220733-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The invention relates to a method for producing carotenoid compounds. The method comprises a transformed metabolising host cell, comprising suitable levels of isopenteryl pyrophosphate and a nucleic acid molecule encoding an enzyme in the carotenoid biosynthetic pathway, under the control of regulatory sequences, and contacting the host cell with carbon substrate to produce a carotenoid compound. The method is useful for producing carotenoid compounds such as antheraxanthin and astaxanthin, by using microorganism having a nucleic acid molecule encoding enzymes in the carotenoid biosynthetic pathway and which metabolise single carbon substrates. The carotenoids have potent anti-oxidant properties useful in diet, and aquaculture elements. The carotenoids are also useful as intermediates in the synthesis of steroids flavours and fragrances and compounds for potential electro-optic applications. The present sequence is Methylomonas 16a sp. dimethylallyl diphosphate (lyth) enzyme used in the invention
                                                       Methylomonas sp
                                                                                            Isoprenoid biosynthetic enzyme; isoprenoid compound; feed additive; keratenoid; pigment; flavour; fragrance; open reading frame 10; ORF10; lytB; IPP; isopentenyl diphosphate; dimethylallyl diphosphate.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Producing carotenoid compounds e.g. antheraxanthin and astaxanthin, by using microorganisms having a nucleic acid molecule encoding enzymes in the carotenoid biosynthetic pathway and which metabolize single carbon
                                                                                                                                                                           Methylomonas 16a ORF10 lytB
                                                                                                                                                                                                                  15-JUL-2002
                                                                                                                                                                                                                                                                                             AAU80334 standard; Protein; 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Claim 47; Page 123-124; 156pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    in the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  318;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                EEKVVFSIPKELKKHMOA 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HAGHPEVEGTXGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                          EEKVVFSIPKELKKHMQA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             318 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100.0%;
100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                           protein sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 1623; DB 23;
Pred. No. 2.3e-141;
); Mismatches 0;
                                                                                                                                  isoprenoid compound; feed additive;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 318;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
```

RESULT 3
ABP60423
ID ABP6
XX
AC ABP6
XX
DT 31-N

ABP60423

standard;

Protein;

316

ξ

ABP60423;

31-MAR-2003

(first entry)

```
S
                                                                                                                      문
                                                                                                                                                    Ś
                                                                                                                                                                                                               á
                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                       S
 밁
                          Ş
                                                           문
                                                                                                                                                                                   문
                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                              encoding an isopremoid compound biosynthetic enzyme, and for the microbial production of isopremoid compounds. The molecules of the invention are also useful for regulating isopremoid biosynthesis in an organism and for producing recombinant organisms for producing various isopremoid compounds. The nucleic acid is also useful for feed additive, for the production of keratenoids and their derivatives, isopremoid intermediates, and as pure products useful as pigments, flavours and fragrances. The present amino acid sequence represents the Methylomonas 16a open reading frame 10 (ORFIO) lyth protein of the invention, as described above. This sequence functions in the formation of IPP (isopentenyl diphosphate) and dimethylallyl diphosphate.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The present invention relates to a new nucleic acid molecule encoding an isoprenoid biosynthetic enzyme isolated from Methylomonas 16a. The invention is useful for obtaining a nucleic acid molecule
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Claim 4; Page 84;
                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Novel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Schenzle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-SEP-2000; 2000US-229907P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         29-AUG-2001; 2001WO-US26852
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Novel nucleic acid molecule encoding a isoprenoid biosynthetic enzyme, isolated from Methylomonas 16a, useful for the production of isoprenoid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              nd ( oand)
 301
                             301
                                                            241
                                                                                                                        181
                                                                                                                                                       181
                                                                                                                                                                                     121
                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ó
                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                          318;
                                                                                                                                                                                                                                                                                                               ш
                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                  EEKVVFSIPKELKKHMQA 318
                                                                                       GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                                                                                                                       DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                     HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                              SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHWQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                      SDVPVGSYLIFSAHGVSKEVQQEABERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                             MQIVLANPRGECAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                           MOIVLANPRGECAGVDRAIEIVDQAIEAFGAPIYVRHEVVHVRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Þ
EEKVVESIPKELKKHMQA
                                                            GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                        DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                   HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Koffas M,
1, Tomb J;
                                                                                                                                                                                                                                                                                                                                                                                                                                       318 AA;
                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DE NEMOURS & CO
                                                                                                                                                                                                                                                                                                                                                                                       100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Norton
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     English
318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              X
C
                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                                       Score 1623; DB 23;
Pred. No. 2.3e-141;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            B
H
                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Odom
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ę
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Picataggio
                                                                                                                                                                                                                                                                                                                                                                                                      23;
                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                      Length 318;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SK,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Rouviere
                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                         240
                                                                                                                                                     240
                                                                                                                                                                                                                  180
                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                               60
                                                                                                                                                                                                                                                                                                                                            60
                                                                                                                                                                                     180
```

Ċ

```
밁
                                                             5
                                                                                                                                                                                                                                                                                                                                                                                                 B
                                                                                                                                     8
                                                                                                                                                                             유
                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                    맑
                                                                                                                                                                                                                                                                              ঠ
                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The invention relates to enriching intermediates (A) in the mevalonate-independent isoprenoid synthesis pathway (MEP-way) comprising deleting, inactivating or otherwise altering a gene (I) in the pathway, in a cell or organism, so that the enzymatic activity of the product of (I) is reduced or made non-natural. The method is used for production of (A), especially substrates of the GCpE and LytB enzymes that activate gamma/delta T cells. (A) and their derivatives are useful for:

(i) determining activity of GcpE and LytB, e.g. to identify their
                                                                                                                                                                                                                                                                                                                                                                                                                      (ii) to activate gamma/delta T cells; and
(iii) as pharmaceuticals. Dead or live cells or organisms enriched in (A can be used similarly for treatment, in humans or animals, of asthma, Crohn's diseases, ulcerative colitis, multiple sclerosis, chronic bronchitis, (auto) ammune diseases, allergies; bone diseases and osteoporosis, also a wide variety of other diseases and for improving the immune response against tumours. The present sequence is that of the Bscherichia coli LytB protein, inactivated in examples of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Disclosure; Page 6-8; 10pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              antiinflammatory; neuroprotective; immunosuppressive; antiallergic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Escherichia coli; mevalonate-independent isoprenoid synthesis pathway; MEP-way; GcpE; LytB; T cell; asthma; Crohn's disease; multiple sclerosis; autoimmune disease; osteoporosis; tumour; antiasthmatic; antiulcer;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  comprises
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Jomaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       23-APR-2001; 2001DE-1019905
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         23-APR-2001; 2001DE-1019905
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              24-0CT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DE10119905-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       osteopathic; enzyme.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Escherichia coli LytB protein SEQ ID NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (JOMA-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  inhibitors;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      isoprenoi
                                                                      181
                                                                                                        121
                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2003-113392/11
                                                                                                                                                                                                                                                                                                                          192;
                                                                                                                                                                             61
                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOMAA PHARMAKA GMBH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ճ
                                                                                                        HAGHPEVEGTMGQYS--NPEGGMYLVESPDDVWKLTVKNSEKLSFMTQTTLSVDDTSDVI 178
                                                                                                                                                                           SEVPDGAILIFSAHGVSQAVRNEAKSRDITVFDATCPLVTKVHMEVARASRRGEESILIG
                                                                                                                                                                                                                                                                       MQTVLANPRGFCAGVDRAISIVDQAIEAFGAPIYVRHEVVHNRTVVDGLXQKGAVFIEEL 60
GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                DALRKREPKI VGPRKDDI CYATTNROBAVRALABQABVVL VVGSKNSSNSNRLABLAQRM
                                                                    DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                         HAGHPEVEGIMGQYEKCIEGGGIYLVEIPEDVRNLKVNNPNDLAYVIQIILSMIDIKVMV 180
                                                                                                                                                                                                                SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG 120
                                                                                                                                                                                                                                                  MQILLANPRGFCAGVDRAISIVENALAIYGAPIYVRHEVVHNRYVVDSLRERGAIFIEQI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             intermediates in the mevalonate-independent pathway of d synthesis, useful for therapeutic activation of T cells, altering enzymatic activity in the pathway
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eberl M,
                                                                                                                                                                                                                                                                                                                                                                                                 316 AA;
                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                          61.4%;
61.3%;
                                                                                                                                                                                                                                                                                                                          ,
60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                German
                                                                                                                                                                                                                                                                                                                        Score 996; DB 24;
Pred. No. 1.8e-83;
9; Mismatches 58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N
                                                                                                                                                                                                                                                                                                                          5B.
                                                                                                                                                                                                                                                                                                                                                         Length 316;
                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                        4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       comprising
                                                                                                                                                                             120
                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ٠ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Æ
                                                                                                                                                                                                                                                                                                                        Ŋ
```

```
RESULT 4
ABP77632
ID ABP7
                    δ
                                               ₽
                                                                    Ś
                                                                                             밁
                                                                                                                    Ş
                                                                                                                                              밁
                                                                                                                                                                   S
                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 맑
                                                                                                                                                                                              Matches
                                                                                                                                                                                                          Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                 The present invention relates to proteins from Neisseria gonorrhoeae. Also disclosed are the nucleic acid molecules encoding the proteins a antibodies that specifically bind to the proteins. The composition comprising the protein, nucleic acid or antibody is useful for the manufacture of a medicament for treating or preventing N. gonorrhoeae infection, this may be in the form of a vaccine or gene therapy. Sequences given in records ABP/6736-ABP81046 represent nucleic acid molecules of the invention.
                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                      New protein from Neisseria gonorrheae, useful for the manufacture medicament for treating or preventing N. gonorrheae infection
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Neisseria gonorrhoeae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N. gonorrhoeae amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       07-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                 Disclosure;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10-0CT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WO200279243-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Antibacterial; infection;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ABP77632;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ABP77632 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                             N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Fontana MR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              12-FEB-2001; 2001GB-0003424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       12-FEB-2002; 2002WO-IB02069
                                                                                                                                                                                                                                                                                                                                                                                                                                                        2003-058415/05
  182
                       183
                                               126
                                                                        123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  239
                                                                                                                                                                                              192;
                                                                                               9
                                                                                                                       63
                                                                                                                                               σ
                                                                                                                                                                       w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CHIRON SPA.
                                                                                                                                                                                                                                                                                                                                                                                                                                             ABZ38602
LNARFPNIRNPHKEDICYATTNRQTAVKELAEQCDIVIVVGSPNSSNSNRLREVAASRGI
                      LREQFESIKEQKKODICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLGK
                                                            GHPEVBGIMGQYEXCTBGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMIDTKVMVDA
                                                                                                                VPVGSYLIFSAHGVSKEVQQEABERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGHA 122
                                                                                                                                              IVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEELSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EENIVFEVPKELR 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GHAEVEGIMGQLAP----GKMLLVBTVGDVAKLEVRNPDKLAYVSQITLSVDETKDIIAA
                                                                                             VPPGATLVYSAHGVSKAVQQEAAERGFRVFDATCPLVTKVHKEVARLDAQDCBIIMIGHK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EEKVVFSIPKELK 313
                                                                                                                                                                                                                                              322 AA;
                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                Page 317; 815pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pizza M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Protein; 322
                                                                                                                                                                                                        60.1%;
61.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Masignani
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       vaccine;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sequence SEQ ID 1794.
                                                                                                                                                                                              48;
                                                                                                                                                                                                          Score 975;
Pred. No. 1
                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              <
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene therapy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Monaci
                                                                                                                                                                                                          .6e-81;
                                                                                                                                                                                                                    DB 24;
                                                                                                                                                                                             66;
                                                                                                                                                                                                                    iength
                                                                                                                                                                                              Indels
                                                                                                                                                                                             6,
                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                    of.
                                                                                                                                                                                                                                                                                                                                              and
                       242
                                               181
                                                                                               125
                                                                                                                                               65
```

```
RRESULT 5
AAY29260
ID 292-0
ID 25-0
ID
                                 Ş
                                                                                      밁
                                                                                                                                S
                                                                                                                                                                                          밁
                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                 Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sequence. P. aeruginosa is an opportunistic human pathogen present in soil water and plants. The specification describes virulence polypeptides and nucleic acid sequence encoding such polypeptides. These sequences can be used to identify a compound which is capable of decreasing the expression of a pathogenic virulence factor. Compounds that inhibit the expression or activity of virulence factor polypeptides can be used to treat pathogenic infections, especially where the infection
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           is a P. aeruginosa infection.

note: the sequences given in the specification were poorly legible, in some instances assumptions were made as to the identity of the residue; it is therefore possible that the sequence given below is
                                                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Disclosure; Fig 4; 228pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Virulence factors useful in developing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 1999-357851/30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ausubel F,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Human pathogen; virulence polypeptide; virulence factor; pathogenic infection; Pseudomonas aeruginosa infection.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAY29260 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The present sequence represents a Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           25-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             25-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        25-0CT-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAY29260;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (GEHO ) GEN HOSPITAL CORP
                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                          entirely correct.
                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 303
                                                                                                                                                                                                                                                                                              191;
                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ŕ
                                                                                      96
                                                                                                                                                                                             36
                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                HAGHPEVEGIMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV 180
                                                                                                                                                                                          MQIKLAMPRGFCAGVDRAIBIVHRALDVFGPPIYVRHEVVHMKFVVDNLRQRGAIFVEBL
                                                                                                                                                                                                                                            MOIVLANDRGECAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIVPVLPKELRR 311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KVVESIPKELKK 314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DAYMVDNASYLQRTWFEGKSKVGVTAGASAPEVLVREVLATIRGWGHET--VREGGGAEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGIBE
                                                                                                                                                                                                                                                                                                                                                                                                        349 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sequence
                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        97US-0066517.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          98WO-US25247.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Drenkard
Tsongalis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   of a virulence factor encoded
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        entry)
                                                                                                                                                                                                                                                                                                                       59.7%;
                                                                                                                                                                                                                                                                                         47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               349
                                                                                                                                                                                                                                                                                              Score 969.5;
Pred. No. 5.9e
17; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          e in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Goodman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 disease treatments
                                                                                                                                                                                                                                                                                                                          .9e-81;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ξ
                                                                                                                                                                                                                                                                                                                                                   DB 20;
                                                                                                                                                                                                                                                                                                 72;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mahajan-Miklos S;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   γď
                                                                                                                                                                                                                                                                                                                                                Length 349;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORF42234c.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          polypeptide
                                                                                                                                                                                                                                                                                              ω
                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                             98
                                                                                                                                                                                                                                               60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     302
```

v

```
RESULT 6
AAU58857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ₽
Sequences AAU33105-AAU68017 represent Propionibacterium acnes immunogenic CC polypeptides. The proteins and their associated DNA sequences are used in the treatment, prevention and diagnosis of medical conditions caused by P. acnes. The disorders include SAPHO syndrome (synovitis, acne, pustulosis, hypertosis and osteomyelitis) uveitis and endophthalmitis. CC P. acnes is also involved in infections of bone, joints and the central nervous system, however it is particularly involved in the inflammatory lesions associated with acne vulgaris. A method for detecting the presence or absence of P. acnes in a patient comprises contacting a cc sample with a binding agent that binds to the proteins of the invention and determining the amount of bound protein in the sample. The collecting for a cnes proteins. These antibodies can be used to downregulate expression and activity of P. acnes polypeptides and comregulate expression and activity of P. acnes polypeptides and comregulate expression and activity of P. acnes polypeptides and comregulate expression and activity of P. acnes polypeptides by characteristic agents for determining P. acnes presence, for example, by enzyme linked immunosorbent assay (ELISA).
                                                                                                                                                                                                                                                                                                                               Example 1; SEQ ID No 20052; 1069pp; English
                                                                                                                                                                                                                                                                                                                                                                   treating
                                                                                                                                                                                                                                                                                                                                                                                   Propionibacterium acnes polypeptides and nucleic acids useful vaccinating against and diagnosing infections, especially uses
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Skeiky YAW,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     21-APR-2000; 2000US-199047P
02-JUN-2000; 2000US-208841P
07-JUL-2000; 2000US-216747P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SAPHO syndrome; synovitis; acne; pustulosis; hypertosis; osteomyelitis; uveitis; endophthalmitis; bone; joint; central nervous system; ELISA; inflammatory lesion; acne vulgaris; enzyme linked immunosorbent assay;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAU58857 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                L'maisonneuve
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20-APR-2001; 2001WO-US12865
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-NOV-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WO200181581-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Propionibacterium acnes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Propionibacterium acnes immunogenic protein #19753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAU58857;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (CORI-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                              2001-616774/71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          156 HEGHPEVEGTMGQYD-ASNGGAIYLVEDEADVAALEVRKPEALHYVTQTTLSMDDTSKVI 214
                                                                                                                                                                                                                                                                                                                                                                                                                                            AAS59596
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CORIXA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DALREOPPSIKEQKKDDICYATONRODAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EEMITFSMPKELR 345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GTPAYLIDGAEDMORGNFCGVRRIGITAGASAPEVLVRGVÍAQLRENG--ASEEQBLEGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Persing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (first
                                                                                                                                                                                                                                                                                                                                                                     vulgaris
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          osteopathic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Zhang
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DH,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ĸ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mitcham JL, Wang S
, Jen S, Carter D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Wang SS,
                                                                                                                                                                                                                                                                                                                                                                                      especially useful
                                                                                                                                                                                                                                                                                                                                                                                                          for
                                                                                                                                                                                                                                                                                              immunogenic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   274
                                                                                                                                                                                                                                                                               ij
```

13

```
RESULT 7
AAG90889
ID AAG9
AC AAG9
AC AAG9
AC AAG9
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC COIY
AC C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ន្តន្តន្តន
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local S
Matches 152
                                                                                                                                                                                                               Nakagawa
Tateishi
                                     Novel polynucleotides derived from Coryneform bacteria, for identifying mutation point of a gene, measuring expression of a gene, analysing expression profile or pattern of a gene and identifying homologous gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EP1108790-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Corynebacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Coryneform bacterium; amino acid synthesis; vitamin; saccharide; organic acid synthesis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  26-SEP-2001
                                                                                                                                                                                                                                                                                                                                                  16-DEC-1999;
07-APR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                          18-DEC-2000; 2000EP-0127688.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20-JUN-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAG90889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAG90889 standard;
                                                                                                                                                                                                                                                                               (KYOW ) KYOWA HAKKO KOGYO KK
                                                                                                                                                                                                                                                                                                                              03-AUG-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 glutamicum protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                2001-376931/40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               152;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N
                                                                                                                                          AAH66108.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                               Σ'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GIEEKVVFSIPKELKK 314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGRBVILIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LIEESLSFALPPQLRK 344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RIRDLHPQLIDPSDDICYATQNRQHAVKQMAPQCDLVIVVGSKNSSNTGRLVEVALESG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QIVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHBVVHNRTVVDGLKQXGAVFIBBLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ALREOFPSIKEOKKUDICYATONRODAVHDLAKISDLILVVGSPNSSNSNRLREIAVOLG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AGHPEVEGIMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQITLSMTDIKVMVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EVPDDALVVFSAHGVSPOVKKEATDRGLRTIDATCPLVTKVHHEAKRFANODTQILLIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AKASYRVDNAGEIEETWLDGVSTIGVTSGASVPEALVQGVIDLLISKGW----PPAEEET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGHEEVEGTTGEAPE-----NITLVQTPADVDGLALDRDRPVAWLSQTTLSVDETVETVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -KPAYLIDTYQDLKQDWLEGIEVVGYTAGASAPEVLVQEVIDQL--KAWGGETTSVRENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           350
                                                                                                                                                                                                                                                                                                                         99JP-0377484.
; 2000JP-0159162.
; 2000JP-0280988.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             47.9%; ilarity 48.1%; Conservative 6
                                                                                                                                                                                                          Mizoguchi
Senoh A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  glutamicum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              fragment
                                                                                                                                                                                                          H, Ando
Ikeda M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 777; DB
Pred. No. 3.5e-
68; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEO
                                                                                                                                                                                                          S, Hayashi M,
Ozaki A;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4643
                                                                                                                                                                                                                                Ochiai
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 350;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                ×
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                Ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 97
```

```
RESULT 8
AAB78920
ID AAB7
용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            무
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              x \times 222222222222222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The present invention provides a number of nucleotide and protein sequences from the Coryneform bacterium Corynebacterium glutamicum. These are useful for identifying the mutation point of a gene derived from a mutant of coryneform bacterium, measuring expression amount and analysing the expression profile or expression pattern of a gene derived from Coryneform bacterium, and identifying a homologue of a gene derived from coryneform bacterium. Coryneform bacteria are useful for producing amino acids, nucleic acids, vitamins, saccharides and organic acids, particularly L-lysine. The present sequence is a protein described in the correction.
                                                                                                                                                                                          fine chemical production; organic acid; proteinogenic amino acid; nonproteinogenic amino acid; purine base; pyrimidine base; nucleoside; nucleotide; lipid; saturated fatty acid; unsaturated fatty acid; diol;
                                                                                                                               Corynebacterium
                                                                                                                                                              evolutionary study; environmental
                                                                                                                                                                              carbohydrate; aromatic compound;
                                                                                                                                                                                                                                            Corynebacterium glutamicum; stress; resistance; tolerance;
                                                                                                                                                                                                                                                                          C. glutamicum SRT protein sequence SEQ ID NO:100.
                                                                                                                                                                                                                                                                                                             30-APR-2001
                                                                                                                                                                                                                                                                                                                                            AAB78920;
                                                                                                                                                                                                                                                                                                                                                                             AAB78920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            in the exemplification of the invention.

Note: The sequence data for this patent did not form specification, but was obtained in electronic format
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              European
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 17; SEQ ID NO: 4643; 246pp + Sequence Listing; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                               308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              152;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                             SAAEKIVFALPRVLR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QIVLANPRGFCAGVDRAIEIVDQAIEAFGAFIYVRHEVVHNRTVVDGLKQKGAVFIEELS
                                                                                                                                                                                                                                                                                                                                                                             standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GIBEKVVFSIPKBLK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EGHEEVEGTMGHSVEKT----HLVDGVAGIATLPEFLNDEPNLIWLSQTTLSVDETWEI 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLK--VNNPNDLAYVTQTTLSMTDTKVM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Patent Office.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NGADNAYLVDYARBIDPAWFEGVETIGISSGASVPEILVQGVIBRLAEFGYD--DVEEVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LGKP-AYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VRBLKVKFPQLQDPPSDDICYATQNRQVAVKAIAERCELMIVVGSRNSSNSVRLVEVAKQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EAPEGANMVFSAHGVSPMVHEBAAAKNIKAIDAACPLVTKVHKEVQRFDKQGFHILFIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KILLAAPRGYCAGVDRAVETVERALEBYGAPIYVRKEIVHNRYVVDTLAEKGAIFVNEAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              325 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                             glutamicum.
                                                                                                                                                                                                                                                                                                                                                                             Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          46.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              67;
                                                                                                                                                                                                                                                                                                                                                                             325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 755; DB 22;
Pred. No. 3.4e-61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                              vitamin; cofactor; polyketide;
  hazard; fermentation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            part of the printed directly from the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10;
                                                                                                                                                                               enzyme;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
```

25-JUN-1999;

99US-0141031

23-JUN-2000; 2000MD-IB00922

WO200100804-A2

```
8
                                                                                                              Ś
                                                                                                                                                        맒
                                                                                                                                                                                     Ś
                                                                                                                                                                                                                               ğ
                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local S
                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  compound, a vitamin, a cofactor, a polyketide, or an enzyme. The fine chemical production can be modulated. The presence of (I) or the SRT proteins (III) encoded by them are used for disgnosing the presence or activity of Corynebacterium diphtheriae. (I), (III) and host cells containing them can be used to map the genomes of organisms related to C. glutamicum, to identify and localise C. glutamicum sequences of interest, in evolutionary studies, in determination of SRT protein regions required for function, in modulating the SRT protein activity, and in modulating the activity of an SRT pathway. (II) are used to permit C. glutamicum to survive in an environment that is normally environmentally or chemically hazardous to it. (I) and protein molecules encoded by it increase the survival of C. glutamicum to chemical and environmental hazards and provide a means for continued growth and multiplication in large scale fermentative growth conditions. By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAF70984 to AAF71133 encode the Corynebacterium glutamicum stress, resistance, and tolerance (SRT) proteins given in AAB78871 to AAB79020. The C. glutamicum SRT genes (I) can be used in vectors (II) for expression in host cells and production of fine chemicals, such as, an organic acid, a proteinogenic or nonproteinogenic amino acid (preferred
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   organic acid, a proteinogenic or nonproteinogenic amino acid (preferred), a purine or pyrimidine base, a nucleoside, a nucleotide, a lipid, a saturated or unsaturated fatty acid, a diol, a carbohydrate, an aromatic
                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    08-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                  increasing the growth rate or maintaining a normal growth rate in poor of toxic conditions, the yield, production and/or efficiency or production of fine chemicals from a culture may be increased.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 20; Page 249-250; 526pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New isolated Corynebacterium glutamicum nucleic acid encoding a dolerance or resistance protein, for production or modulation of production of fine chemicals, such as, e.g. amino acids, lipids, carbohydrates, or enzymes -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pompejus M,
Kim H;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               14-JUL-1999;
27-AUG-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      09-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          08-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N-PSDB; AAF71033.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (BADI )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2001-061972/07.
                                                                                                                  122
                                                                                                                                                          75
                                                                                                                                                                                             62
                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BASE
                                                                                                                                                                                                                                                    QIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEELS
                               VDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQ
                                                                                                                  AGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLK--VNNPNDLAYVTQTTLSMTDTKVM 179
                                                                                                                                                                                         DVPVGSYLIFSAHGVSKEVQQEABERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGH
VRELKVKFPQLQDPPSDDICYATQNRQVAVKAIAERCELMIVVGSRNSSNSVRLVBVAKQ
                                                                                                                                                        EAPEGANMVFSAHGVSPMVHEEAAAKNIKAIDAACPLVTKVHKEVQRFDKQGFHILFIGH
                                                                                                                                                                                                                               KILLAAPRGYCAGVDRAVETVERALEBYGAPIYVRKEIVHNRYVVDTLAEKGAIFVNEAS
                                                                                                                                                                                                                                                                                                                                                                                 325 AA;
                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Kroeger
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ÄG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99DE-1030429.
99US-0142692.
99DE-1031413.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         99DB-1040764.
99US-0151214.
99DB-1041382.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               99DE-1032230.
99DE-1032914.
                                                                                                                                                                                                                                                                                                                        46.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Schroeder
                                                                                                                                                                                                                                                                                                        67;
                                                                                                                                                                                                                                                                                                                        Score 755; DB 22;
Pred. No. 3.4e-61;
                                                                             -HIVDGVAGIATLPEFLNDEPNL
                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Έ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Zelder O,
                                                                                                                                                                                                                                                                                                      86;
                                                                                                                                                                                                                                                                                                                                         Length 325;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Haberhauer
                                                                                                                                                                                                                                                                                                        10,
                                                                                                                                                                                                                                                                                                                                                                                                                                                      in poor or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    stress,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Lee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Η
                                                                               189
                                                                                                                                                                                           121
                                                                                                                                                                                                                               74
                                                                                                                                                                                                                                                                    61
```

S 밁 Ş

V----PVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVIL 118 VLLASPRSFCAGVERAIETVKRVLDVAEGPVYVRKQIVHNTVVVAELRDRGAVFVEDLDE

TVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBBLSD

Matches Query Match Best Local !

150;

Conservative

60

Score 743.5; DB Pred. No. 4e-60; 0; Mismatches

Indels

Gaps

(u)

79

EG 94,

Length

329; 11;

Similarity

45.88;

```
RESULT 9
AAGR 1220
ID AAGR 1220
AX AAGR
XX AAGR
XX DT U
XX DT U
XX DT U
XX DT U
XX DT U
XX DT U
XX AAGR
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYCC
XX AYC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                        polypeptide sequence that may be a drug target, or essential for growth or viability of an organism. Polymucleotide sequences AAH51947 - AAH52092 represent DNA encoding proteins AAG81096 - AAG81241, Mycobacterium tuberculosis proteins which are potential drug targets. The DNA and protein sequences are used to illustrate the method of the invention. The method involves providing an unknown nucleotide or polypeptide sequences, and comparing it to a number of sequences along with at least one algorithm capable of analysing a functional relationship between nucleotide and polypeptide sequences. The method is useful for characterising the function of nucleic acids and polypeptides that may be useful as a target for a drug or essential for the growth or viability of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                12-NOV-1999;
12-NOV-1999;
01-FEB-2000;
       Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Disclosure;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             involves providing between nucleotide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      This invention relates to a method
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Identifying nucleotide or polypeptide sequence for use as drug targe involves providing algorithm that analyzes a functional relationship between nucleotide or polypeptide sequences, and comparing the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           13-NOV-2000; 2000WO-US31152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              17-MAY-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO200135317-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mycobacterium tuberculosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mycobacterium tuberculosis potential drug target protein SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAG81220;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAG81220 standard; Protein; 329 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (REGC ) UNIV CALIFORNIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2001-329193/34.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LGKP-AYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENS 298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SAAEKIVFALPRVLR 322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GIBEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NGADNAYLVDYAREIDPAWFEGVETIGISSGASVPEILVOGVIERLAEFGYD--DVEEVT 307
          329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Page 187; 207pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2000US-0179531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           growth; organism viability; characterisation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Rotstein
       Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       99US-0165086.
99US-0165124.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SH,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Marcotte
                                                                                                                                                                                                                                                                                                                                                                                                                                      for identifying
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Z
                                                                                                                                                                                                                                                                                                                                                                                                                                          a nucleotide or essential for g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     271.
```

```
RESULT 10
AAG81137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                 12-NOV-1999;
12-NOV-1999;
01-FEB-2000;
                                 method involves providing an unknown nucleotide or polypeptide sequences, and comparing it to a number of sequences along with at least one algorithm capable of analysing a functional relationship between nucleotide and polypeptide sequences. The method is useful for characterising the function of nucleic acids and polypeptides that may be useful as a target for a drug or essential for the growth or viability of
                                                                                                                       This invention relates to a method for identifying a nucleotide or polypeptide sequence that may be a drug target, or essential for growth or viability of an organism. Polymucleotide sequences AAH51947 - AAH52092 represent DNA encoding proteins AAG81096 - AAG81241, Mycobacterium tuberculosis proteins which are potential drug targets. The DNA and protein sequences are used to illustrate the method of the invention. The
                                                                                                                                                                                                                                                                    Identifying nucleotide or polypeptide sequence for use as drug target, involves providing algorithm that analyzes a functional relationship between nucleotide or polypeptide sequences, and comparing the
                                                                                                                                                                                                                             Disclosure; Page 165; 207pp; English.
                                                                                                                                                                                                                                                          sequences
                                                                                                                                                                                                                                                                                                                                                                          Eisenberg D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       17-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO200135317-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mycobacterium tuberculosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mycobacterium tuberculosis potential drug target protein SEQ ID 188.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      04-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAG81137;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAG81137 standard;
                                                                                                                                                                                                                                                                                                                                                                                                       (REGC ) UNIV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           13-NOV-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           target;
                                                                                                                                                                                                                                                                                                                                              2001-329193/34.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     08
                                                                                                                                                                                                                                                                                                                               AAH51988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IATETVRFGLPKQVR 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GIEEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VIDALRARFPTLGQPPSEDICYATTNRQRALQSMVGECDVVLVIGSCNSSNSRRLVELAQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MVDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLRBIAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RSGTPAYLIDGPDDIEPEWLSSVSTIGVTAGASAPPRLVGQVIDALRGYASIT--VVERS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IGHAGHEETEGTLGVAPRST-----LLVQTPADVAALMLPEGTQLSYLTQTTLALDETAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IGHAGHPEVEGIMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVIQITLSMIDIKV 178
                                                                                                                                                                                                                                                                                                                                                                                                                                 99US-0165086.
99US-0165124.
2000US-0179531.
                                                                                                                                                                                                                                                                                                                                                                                                       CALIFORNIA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2000WO-US31152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           growth; organism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first
                                                                                                                                                                                                                                                                                                                                                                          Rotstein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Protein; 335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   entry)
                                                                                                                                                                                                                                                                                                                                                                          HS
                                                                                                                                                                                                                                                                                                                                                                          Marcotte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        viability; characterisation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ያ
                                                                                                                                                                                                                                                                                                                                                                          핓
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         312
```

Sequence

\$

in

organism.

```
RESULT 11
AAY35672
ID AAY35672
AC AAY35
XX AAY35
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
XX Respi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ď.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     よ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches 147;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity
AAY34584-Y35879 represent the proteins encoded by all the open reading frames in the complete genome (see AAX391990) of Chlamydia pneumoniae. C. pneumoniae causes respiratory disease such as pneumonia and bronchitis and is thought to be a contributing factor in heart disease, sarcoidosis, sinusitis, purulent otitis media, erythema nodosum or pharyngitis. The polypeptides encoded by the open reading frames of the C. pneumoniae genome (see AAY34584-Y35879) can be used in immunogenic compositions as vaccines. Vectors containing C. pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                        WPI; 1999-357842/30.
                                                                                                                                                                                                                                                                                                                                                                                                                                            Griffais R;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              04-NOV-1998;
21-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Chlamydia pneumoniae.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Respiratory disease; sinusitis; purulent (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chlamydia pneumoniae cellular envelope protein.
                                                                                                                                                                                                                                                                     Page 1389; Disclosure; 1912pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (GEST ) GENSET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               03-JUN-1999.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      W09927105-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        vaccine; neutralising epitope
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     13-SEP-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAY35672;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAY35672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27
                                                                                                                                                                                                                                                                                                                             sequence of Chlamydia pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ŋ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NETLVFALPRELR 332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BEKVVFSIPKBLK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QVPEGATVVFSAHGVAPTVHVSASERNLQVIDATCPLVTKVHNBARRFARDDYDILLIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGH 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RAAHLVDWADDIDSAWLDGVTTVGVTSGASVPEVLVRGVLERLAECGYDI--VQPVTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -KPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RLRRRFPKLQDPPSDDICYATQNRQVAVKAMAPECELVIVVGSRNSSNSVRLVEVALGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ECHEEVVGTAGE----APDHVQLVDGVDAVDQVTVRDEDKVVWLSQTTLSVDETMEIVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVMNPNDLAYVTQTTLSMTDTKVMVD 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RVLLABPRGYCAGVDRAVETVBRALQKHGPPVYVRHEIVHNRHVVDTLAKAGAVFVEBTB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QIVIANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEELS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ALREQPPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98US-0107078.
97FR-0014673.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    98WO-IB01890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 pneumonia; bronchitis; heart disease; sarcoidosis; otitis media; erythema nodosum; pharynqitis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                45.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 733; DB 22;
Pred. No. 3.8e-59;
6; Mismatches 92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 335;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     201
```

```
ARBSULT 12
ABP62010
ID ABP62010
ABP62
XX ABP62
XX ABP62
XX O8-OC
XX CWL-O
DE C. pn
XX Sinus
KW sinus
KW adult
KW ather
XX EP121
XX O3-JU
XX O3-JU
XX (SHIR
XX (SHIR
XX WPI;
DR N-PSD
XX New C
PFT proph
PT infec
PFT Obstr
XX Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   . 문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           뫉
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  끖
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ន្តន្តន្តន
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local S
Matches 143
     Claim
                             New Chlamydia pneumoniae proteins or antigens, useful for the prophylactic or therapeutic treatment of Chlamydial bacterial infections, e.g. sinusitis, pharyngitis, bronchitis, or chronobstructive pulmonary disease
                                                                                                                                                                                                                                                                                                                                                     CWL-029; BVK-CPN; antibiotic; antibacterial; Chlamydial infection; simusitis; pharyngitis; bronchitis; pneumonitis; asthmatic bronchi adult-onset asthma; chronic obstructive pulmonary disease; COPD;

    C. pneumoniae

                                                                                                                                                                                                                                                                                                                                                                                                                                         08-OCT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ABP62010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ABP62010 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       nucleotides sequences can also be used as immunogenic compositions, especially where the vector directs the expression of a neutralising epitope of C. pneumoniae.
                                                                                                                                                                                                  21-DEC-2000; 2000US-256941P
                                                                                                                                                                                                                             21-DEC-2001; 2001EP-0130295
                                                                                                                                                                                                                                                         03-JUL-2002
                                                                                                                                                                                                                                                                                    EP1219635-A2
                                                                                                                                                                                                                                                                                                           Chlamydia pneumoniae.
                                                                                                                                                                                                                                                                                                                                         atherogenesis; atherosclerosis.
                                                                                                                                                                      (SHIR-)
                                                                                                                   2002-530680/57.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               122 AGHPEVEGIMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        143;
       9; Figure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N
                                                                                                                                             'n
                                                                                                     ABQ92504.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                      SHIRE BIOCHEM INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QIVLANPRGFCAGYDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEBLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NDIFAVEDVVFQLPKELR 308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -----EKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VPADLINNPEDIDTNIVNHSGDIAMTAGASTPEDVVQACIRKL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGIB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ALLKRYPSIITLPSSSICYATTNRQKALRSVLSRVNYVYVVGDVNSSNSNRLREVALRRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KKHVEVIĞIVĞEVPE----HITVVEKVADVEALPFSSDTPLFYITQTTLSLDDVQEISS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DVEVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAK4AKQGREVILIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KLELCNPRGFCSGVVRAIQVVEVALEKWGAPIYVKHEIVHNRHVVNALRAKGAIFVEELV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DVPEGERVIYSAHGIPPSVRAEAKARKLIDIDATCGLVTKVHSAAKLYASKGYKIILIGH
                                                                                                                                            Hamel J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       40.9%;
ilarity 45.0%;
Conservative 5
                                                                                                                                                                                                                                                                                                                                                                                                                                         (first
                                                                                                                                                                                                                                                                                                                                                                                                             BVH-CPN18 from strain CWL-029.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ą
بر
10
10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Protein;
     122pp; English
                                                                                                                                             Brodeur
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        59.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 663; DB
Pred. No. 9.9e-
59; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              310
                                                                                                                                            BR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              B
                                                                                                                                             Martin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 20;
.9e-53;
                                                                                                                                             Ų
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length
                                               or chronic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     <u>н</u>
В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SSLIPGLOVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
```

```
ARUGUAT 13
ARUGUAT ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARUGUAT
ARU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 #RRRRRRRRRRR # $
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                              08-MAY-2000;
30-MAY-2000;
16-JUN-2000;
16-JUN-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       The invention relates to novel isolated polypeptides from Chlamydia pneumoniae. The polypeptides of the invention have antibiotic and antibacterial activity. The polypeptide or composition of the invention is useful for the prophylactic or therapeutic treatment of Chlamydial bacterial infection (specifically those caused by C. pneumoniae, C. psittaci or C. trachomatis, e.g. sinusitis, pharyngitis, bronchitis, pneumonitis, asthmatic bronchitis, adult-onset asthma, chronic obstructive pulmonary disease (COPD), atherogenesis or atherosclerosis. The sequences shown in ABB61993-ABB62011 represent proteins BVH-CPNI to
                                                                                                                                                                                                                                                                                                                                                                                                                                      ATP binding cassette; secretary locus open reading frame; endopeptidase; secretary locus ORF; protease; metalloprotease; CLP protease ATPase; CLP protease subunit; transglycolase/transpeptidase; CLPc protease; thioredoxin; Chlamydia infection; antibacterial.
                       16-JUN-2000;
16-JUN-2000;
                                                                                                                                                                                                                    08-MAY-2001;
                                                                                                                                                                                                                                                                           15-NOV-2001
                                                                                                                                                                                                                                                                                                                                                                                 Chlamydophila pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Chlamydophila pneumoniae metalloproteinase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      26-MAR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAU09434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BVH-CPN19
                                                                                                                                                                                                                                                                                                                                WO200185972-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        143;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NDIFAVEDVVPQLPKELR 308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VPADLINNPEDIDTMIVNHSGDIAMTAGASTPEDVVQACIRKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KKHVEVIGIVGEVPE----HITVVEKVADVEALPFSSDTPLFYITQTTLSLDDVQEISS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DVPEGERVIYSAHGIPPSVRAEAKARKLIDIDATCGLVTKVHSAAKLYASKGYKIILIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DVFVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KLILCNPRGFCSGVVRAIQVVEVALEKWGAPIYVKHEIVHNRHVVNALRAKGAIFVEELV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QIVLANPRGECAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEELS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -----EKVVESIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ALLKRYPSIITLPSSSICYATTNRQKALRSVLSRVNYVYVVGDVNSSNSNRLREVALRRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of C. pneumoniae.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 310 AA:
; 2000US-207852P.
; 2000US-211796P.
; 2000US-211797P.
; 2000US-211798P.
; 2000US-211801P.
; 2000US-212044P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                2000US-202672P.
                                                                                                                                                                                                                       2001WO-CA00653
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               40.9%; Score 663; DB 23; 45.0%; Pred. No. 9.9e-53;
                                                                                                                                                                                                                                                                                                                                                                                       CWL029
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       23 ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            310;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ---SSLIPGLQVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            237
```

```
CANARARARA
                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                       ğ
                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                      멼
                                                                                                                                                                                                                                                                                                                                                                                                    Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                      문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     먕
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The present invention relates to the isolation of Chlamydophila pneumoniae strain CM1029 genes and their encoded proteins. The genes of the invention encode an ATP binding cassette gene, a secretary locus open reading frame (ORF), an endopeptidase, a protease, a metalloprotease, CLP protease ATPase, a CLP protease subunit, a transglycolase/transpeptidase, a CLP protease, or thioredoxin. The genes of the invention can be used in a vector as a vaccine for the prevention and treatment of Chlamydia infections. Also described are be and T-cell epitopes from the proteins of the invention which can be used as Chlamydia antigens. AAU09430-AAU09439 represent the proteins encoded by the C. pneumoniae genes (AAS18750-AAS18759) of the invention.
             Bifidobacterium longum NCC2705; Bifidobacterium; bacterial; antidiarrheic; antibacterial; inhibitor of Salmonella; dete
                                                             Bifidobacterium
                                                                                               19-NOV-2002
                                                                                                                                                           ABP66088 standard; Protein; 352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Vaccine useful for immunising mammals against chlamydia infections, comprises vectors having sequences of ATP binding cassette gene, secretary locus open reading frame gene of chlamydia -
                                                                                                                              ABP66088
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Murdin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         26-SEP-2000; 2000US-235335P
26-SEP-2000; 2000US-235361P
26-SEP-2000; 2000US-235398P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (AVET )
                                                                                                                                                                                                                                                                                                                                                                        178
                                                                                                                                                                                                                                           291
                                                                                                                                                                                                                                                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                                                                                                                                                                      123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2002-049447/06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   143;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  h 40.9%;
Similarity 45.0%;
43; Conservative !
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AVENTIS PASTEUR
                                                                                                                                                                                                                                        NDIFAVEDVVFQLPKELR 308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMVD
                                                                                                                                                                                                                                                                                                       VPADLINNPEDIDINIVNHSGDIAMTAGASTPEDVVQACIRKL-----SSLIPGLQVB
                                                                                                                                                                                                                                                                                                                                    KPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGIE
                                                                                                                                                                                                                                                                                                                                                                                                    ALREOFPSIKEOKKODICYATONRODAVHDLAKISDLILVVGSPNSSNSNRLREIAVOLG
                                                                                                                                                                                                                                                                                                                                                                                                                                    KKHVEVIGIVGEVPE-----HITVVEKVADVEALPFSSDTPLFYITQTTLSLDDVQEISS 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DVPEGERVIYSAHGIPPSVRAEAKARKLIDIDATCGLVTKVHSAAKLYASKGYKIILIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DVZVGSYLIFSAHGVSKEVQQEABERQLIVFDATCPLVTKVHMQVAKHAKQGREVILIGH 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 XIIICNPRGFCSGVVRAIQVVEVALEXWGAPIYVKHBIVHNEHVVNALRAKGAIFVEELV 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QIVLANPRGFCAGYDRAIBIVDQAIBAFGAPIYVRHBVVHNRTVVDGLKQKGAVFIEBLS 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Fig 5; 355pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Oomen RP,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AA.
                                                                                                                                                                                                                                                                        EKVVFSIPKELK 313
                                                               longum NCC2705
                                                                                              entry)
 acid bacterium;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Wang
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ġ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 663; DB 23;
Pred. No. 9.9e-53;
9; Mismatches 98
                                                           ORF amino acid sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Dumm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ש
diarrhoea; pathogenic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ;
86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 310;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                 detection;
                                                               SEO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  18
                                                               ü
 bacteria;
                                                               NO:832
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                      237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  بن
```

음 성 음 성 음 성 음

202

167

261

96 106 146 166 201

SQTTLSVDETADTIAALKAKPPWIQEPPSSDICYATSNRQAAVKLVAQQSDCVVIVGSAN
SSNSNRLREIAVQ-LGK--PAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQ

227

147

87 107

QĠĀVĒVQĒLĀBIĒDAĀAQĀĞIĒVVĒSĀHĠVŠĒVVKĀĒĀERRĪGMEVVDĀTCĒLVGKVHREV ĀKHĀKQGRĒVILIGHĀGHPĒVĒGTMGQYĒKCTĒGGGTYLVĒTPĒDVRNLKVKNĒNDLĀYV S

27

52 KGAVFIBELSDVP-----VGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQV

3 IVLANPRGFCAGVDRAI---EIVDQAIEAFG-----APIYVRHEVVHNRTVVDGLKQ

VVLADPRGFCAGVDRAILTVQTILKAAEASGKRTREDGLPPVYVRRQIVHNKHVVEDLAG

Query Match Best Local | Matches 14

Similarity

40.5%;

Score 658; DB 23; Pred. No. 3.5e-52; 4; Mismatches 96

Length 352; Indels 2

26;

Gaps

Conservative

64;

```
CC The present invention describes a polynucleotide (I) comprising a CC sequences of a Bifidobacterium genome selected from the nucleotide CC sequences given in ABQ81842 and ABQ81843, or a sequence exhibiting at CC least 90% identity or which hybridises with the sequences given in CC ABQ81842 and ABQ81843. Also described is a polynucleotide (II) encoding CC affished protein, comprising a sequence selected from 1097 sequences GC given in ABG8258 to ABP66354 ligated in frame to a polynucleotide (CI) (which is a probe) is useful for the detection and/or identification CC (I) (which is a probe) is useful for the detection and/or identification of Bifidobacterium longum in a biological sample. A carrier containing CC the lactic acid bacterium Bifidobacterium longum NCC2705 (CNCM I-2618) CC can be used for preventing and/or treating diarrhoea brought about by pathogenic bacteria and/or rotavirus. The carrier is a food composition CC selected from milk, yogurt, curd, cheese, fermented milks, milk based CC fermented products, icc-oreams, fermented cereal based products, milk based conducts, infant formula, pet food or a pharmaceutical composition celected from tablets, liquid bacterial suspensions, dried oral supplement, dry tube feeding or wet tube feeding. CC supplement, wet oral supplement, dry tube feeding or wet tube feeding. Compression of the Bifidobacterium gene. ABQ81844 to ABQ81850 represent affidobacterium related nucleotide sequences given in the Sequence.
Sequence
                                                             N.B. The sequence data for specification but is based
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Novel polymucleotide comprising Bifidobacterium genome sequence useful as a probe or primer for detecting and/or identifying Bifidobacterium longum in a biological sample -
                                                                                                                            Listing from the present
                                                                                                        specification.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Claim 3; SEQ ID 832; 80pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 2002-668397/72.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            30-JAN-2001; 2001EP-0102050
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bifidobacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 30-JAN-2001; 2001EP-0102050
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               rotavirus; food composition; pharmaceutical composition
                                           Patent Office.
352
Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NESTLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SA
                                                                                                                            invention
                                                             this patent
on sequence
                                                                                                                          sequences given in the Sequence but not mentioned further within the
                                                             is not represented in the information supplied by the
                                                             ne printed the
```

```
RESULT 15
AAY37259
ID AAY377
XX AAY37
XX VACCI
KW PARTH
KW DARTH
KW DARTH
KW DAY37
XX DAY38
XX 10-JU
PF 27-NO
XX 04-NO
PR 28-NO
PR 17-DE
XX 04-NO
P
                                          Ś
                                                                                                B
                                                                                                                                                Ś
                                                                                                                                                                                                                   ₽
                                                                                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                         Query Match
Best Local Simi
Matches 145;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY36754-Y37949 are encoded by open reading frames (ORFs) of the genome of Chlamydia trachomatis (see AAZ01425). The polypeptides can be used as vaccines against Chlamydia trachomatis. Antisense and ribozyme sequences can also be used to control growth of the microorganism. Chlamydia trachomatis is responsible for a large number of diseases, e.g. eye diseases such as conventional trachoma, nonendemic trachoma, paratrachoma, and inclusion conjunctivitis; genital diseases such as nongonococcal uretritis, epidymitis, cervicitis, salpingitis, perihepatitis, bartholinitis; pneumopathy in breast feeding infants; and venereal lymphogramulomatosis. The polypeptides of the invention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 04-NOV-1998;
28-NOV-1997;
17-DEC-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Disclosure; Page 1012-1013; 1755pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Genome sequence of Chlamydia trachomatis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 1999-371125/31.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAY37259 standard; Protein; 307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               may be of use in treating these diseases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    27-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                W09928475-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chlamydia trachomatis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Vaccine; eye disease; conventional trachoma; nonendemic trachoma; paratrachoma; inclusion conjunctivitis; genital disease; perihepatitis; nongonococcal uretritis; epidymitis; cervicitis; aslpingitis; bartholinitis; pneumopathy; venereal lymphogranulomatosis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY37259;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (GEST ) GENSET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Amino acid sequence of a Chlamydia trachomatis protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    07-OCT-1999
                                                                                                                                                                                                                                                                                                                                                           Local Similarity
                                             122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           262
                                                                                                      3
                                                                                                                                                         62
                                                                                                                                                                                                                   w
                                                                                                                                                                                                          AGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMVD 181
                                                                                    DVFVGSYLIFSAHGVSKEVQQEABERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGH 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LKAWGGETTSVRENSGIEEKVVFSIPKELKK 314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LQNLG--FTGMKSVETIKENMHFVLPAELRR 350
                                                                                                                                                                                                                                                                                                                                                                                                                                            307 AA;
                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 98US-0107077.
97FR-0015041.
97FR-0016034.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    98WO-IB01939.
                                                                                                                                                                                                                                                                                                                                                     40.5%;
                                                                                                                                                                                                                                                                                                                            53;
                                                                                                                                                                                                                                                                                                                         Score 657; DB 20;
Pred. No. 3.5e-52;
3; Mismatches 100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A
                                                                                                                                                                                                                                                                                                                                                                             Length 307;
                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                            20;
                                                                                                                                                                                                                                                                                                                            Gaps
```

ŧ

```
맗
                                   Ś
                                                                            몺
                                                                                                       S
                                                                                                                                                      뫍
                                                                                                                                                                                 S
                                                                                                                                                                                                                                  몽
                                                                                                                                                          178
                                                                                                                                                                                               182
  290
                                                                                                                                                                                                                                  123 RKHVEIIGIRGE-----APDQITVVENIAEVBALPFSAQDPLFYVTQTTLSMDDAADIVA 177
                                                                                                                 KPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLV-----QEVIDQLKAWGGETTSV 294
                                                                                                                                                                                     ALREGFFSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLG 241
EMDLEVEEDTVFQLPKEL 307
                                     RENSGIBEKVVFSIPKEL 312
                                                                            VTARLVNHPDEVTEEILQYSGNIGITAGASTPEDVVQACLMKLQELIPDL-----SI
                                                                                                                                                      ALKARYPRIFTLESSSICYATONROGALRNILPOVDFVYVIGDROSSNSNRLREVAERRG 237
```

Search completed: January 29, 2004, 15:49:46
Job time: 30.0679 secs

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Minimum
Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     on:
   Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         - DB
                                                                                                                                                                                                                                                                                     1048.
                                                                                                                                                                                                                                                               1028.5
                                                                                                                                663
116.5
104
103
103
101.5
101
101
101
101
101
99.5
99.5
                                                                                                                                                                                                                                                                                                          Score
  seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        length:
                                                                                                                                                                                                                                                                                                                                                                                                     Issued Patents AA:*

1: /cgn2_6/ptcdata/1/iaa/5A_COMB.pep:*

2: /cgn2_6/ptcdata/1/iaa/5B_COMB.pep:*

3: /cgn2_6/ptcdata/1/iaa/6A_COMB.pep:*

4: /cgn2_6/ptcdata/1/iaa/6B_COMB.pep:*

5: /cgn2_6/ptcdata/1/iaa/PCTUS_COMB.pep:*

6: /cgn2_6/ptcdata/1/iaa/backfiles1.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                          Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     January
  328717 seqs,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-941-947A-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MQIVLANPRGFCAGVDRAIE...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Copyright
                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     29,
  3369
3699
3699
3699
5696
5696
5733
5733
5733
5733
5733
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2004, 15:45:34 ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GenCore version
(c) 1993 - 2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               42310858 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gapext 0.5
                   US-09-328-352-6046
US-09-199-637A-429
US-09-199-637A-629
US-09-198-452A-1090
US-09-198-452A-5031
US-09-198-446B-19
US-09-198-446B-19
US-08-198-446B-19
US-08-198-446B-19
US-08-467-822-35
US-08-467-822-35
US-08-466-248-35
US-08-466-248-35
US-08-144-121-4
US-08-973-888-3
US-08-144-121-4
US-08-971-714-2
US-09-1714-001C-3404
US-09-1714-001C-3404
US-09-202-491-7
US-08-981-787-1
US-08-981-787-1
US-08-981-787-1
US-08-981-787-1
US-08-981-787-1
US-08-981-787-1
US-08-981-787-1
US-08-981-787-1
US-08-981-787-1
US-08-981-787-1
US-08-981-787-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; Search time 9.98038 Seconds (without alignments)
1348.130 Million cell updates
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5.1.6
Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .GIEEKVVFSIPKELKKHMQA 318
                                                                                  Sequence 6046, Ap
Sequence 429, App
Sequence 21399, Ap
Sequence 6431, Ap
Sequence 5024, Appl
Sequence 19, Appl
Sequence 19, Appl
Sequence 4705, Appl
Sequence 35, Appl
Sequence 35, Appl
Sequence 36, Appli
Sequence 4, Appli
Sequence 3, Appli
Sequence 3, Appli
Sequence 2, Appli
Sequence 2, Appli
Sequence 2, Appli
Sequence 3, Appli
                   Sequence
Sequence
Sequence
                                                  Sequence
Sequence
                                                                                                                                                                                                                                                                                                        Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               cell updates/sec
Appli
Appli
Appli
Appli
Appli
Appli
Appli
Appli
Appli
Appli
```

; TYPE: PRT ; ORGANISM: Acinetobacter baumannii US-09-328-352-6046

NUMBER OF SEQ ID SEQ ID NO 6046 LENGTH: 336

GENERAL INFORMATION:
APPLICANT: GARY L. Breton et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID
TITLE OF INVENTION: BAUMANNII FOR DIAGNOSTICS AN
FILE REFERENCE: GTC99-03PA
CURRENT APPLICATION NUMBER: US/09/328,352
CURRENT FILING DATE: 1999-06-04
NUMBER OF SEQ ID NOS: 8252

AND

SEQUENCES

QUENCES RELATING TO ACINETOBACTER THERAPEUTICS

93.5.7 981.0 US-09-252-991A-18616 91.5.6. 298.3 US-09-952-991A-18616 91.5.6. 298.4 US-09-36-784-24 91.5.6. 254.8 4 US-09-172-472-1 91.5.6. 335.4 US-09-172-3 90.5.6. 540.4 US-09-34-901-6 90.5.6. 540.4 US-08-316-251-3 90.5.5.6. 540.4 US-08-316-251-3 90.5.5.6. 540.4 US-08-316-251-3 90.5.5.6. 540.4 US-08-316-251-3 90.5.5.6. 540.2 US-08-467-822-3 90.5.5.6. 541.2 US-08-447-154-19 90.5.5.6. 541.2 US-08-447-154-19 90.5.5.6. 541.2 US-08-447-154-19 90.5.5.6. 541.3 US-08-447-154-19 90.5.5.6. 541.3 US-08-428-34-90-90-90-90-90-90-90-90-90-90-90-90-90-	45	44	43	42	41	40	بر و	بي 8	37	36	Ç.	<u>س</u> 4.	£	32	3.1 1	30	29	0
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	88.5	88.5	89.5	90.5						90.5	90.5	90.5	91	91.5	91.5	91.5	93	ŭ
	5 5	Մ. Մ	წ	IJ. 6	ь. 6	ნ	5.6	ნ	5. 6	5.6	5. 6	υ, 6	υ 6	5. 6	5.6	5.6	5.7	0.
	885	885	243	710	541	541	541	541	540	540	540	540	335	2548	298	298	981	Ü
US-09-052-991A-18616 US-09-953-991A-18616 US-09-954-782-1 US-09-934-901-6 US-09-934-901-6 US-09-934-901-6 US-09-34-901-6 US-09-368-041-3 US-09-468-041-3 US-09-468-041-3 US-09-468-041-3 US-09-468-041-3 US-09-468-041-3 US-08-467-154-19 US-08-467-154-19 US-08-467-154-19 US-08-467-28-34 US-09-107-532A-5067 US-08-310-991A-18154 US-08-310-991A-18154 US-08-310-991A-2	u	Ŋ	4	4	w	w	N	Ŋ	ψı	4	4	4	4	4	4	w	4.	Ç
	US-08-841-089-2	US-08-310-912A-2	US-09-252-991A-18154	US-09-107-532A-5067	US-08-466-248-34	US-08-432-697-34	US-08-447-154-19	US-08-467-822-34	PCT-US94-06362-3	US-09-468-041-3	US-08-336-251-3	US-08-461-722-3	US-09-934-901-6	US-09-172-422-1	US-09-536-784-24	US-08-961-083-24	US-09-252-991A-18616	T.C.CTT-0660-134
	2, Appli	2, Appli	18154, A	5067, Ap	•	34, Appl	19, Appl	34, Appl	3, Appli	3, Appli	3, Appli	3, Appli	6, Appli	1, Appli	24, Appl	24, Appl	18616, A	riddw 'r

ALIGNMENTS

RESULT 1 US-09-328-352-6046

Sequence 6046, Application Patent No. 6562958

US/09328352

```
RESULT 2
US-09-199-637A-429
; Sequence 429, Ap
                                                                      닭
                                                                                            Ś
                                                                                                                          밁
                                                                                                                                                  Ś
                                                                                                                                                                                   ğ
                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                        봆
                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                              먑
                                                                                                                                                                                                                                                                                                                    $
                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity
                                                                                                 301
                                                                                                                            260
                                                                                                                                                                                                              181
                                                                                                                                                                                                                                           141
                                                                                                                                                       241
                                                                                                                                                                                     200
                                                                                                                                                                                                                                                                      121
                                                                      318
                                                                                                                                                                                                                                                                                                                                                                                                             203;
                                                                                                                                                                                                                                                                                                 81
                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                       21
                                                                                                                                                                                                                                                                                                                                                                                   ч
                                                                                                                                                       GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                                                                                                                                                                                                                                        HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV 180
                                                                                                                                                                                                                                                                                                 DOVPDDSIVIFSAHGVSKAVQQBABRRGLKVFDATCPLVTKVHIBVTKYAREGTEAILIG 140
                                                                                                                                                                                                                                                                                                                   SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHWQVAXHAKQGREVILIG 120
                                                                                                                                                                                                                                                                                                                                                       MEIVLANPRGFCAGVDRAIAIVNRALECFNPPIYVRHEVVHNKFVVDDLRQRGAVFVDEL
                                                                                                                                                                                                                                                                                                                                                                                MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                   EEKVVFSIPKELKKHM 316
                                                                                                                            GKAAYLVDNADQLEQSWFNDTCKIGVTAGASAPEILIKQVTQRLQDWGAQ--APKELEGR
                                                                                                                                                                                  DALRAKFFNIQGFRKDDICYATQNRQDAVRDLAEKCDVVLVVGSFNSSNSNRLRELAERM
                                                                                                                                                                                                           DALREQFPSIKEQKKODICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL 240
                                                                                                                                                                                                                                         HEGHPEVEGTMGQYDK-LKGGDIYLVEDEADVAALEVRHPEKLAFVTQTTLSIDDTAKVI 199
                                                                      EENITFSLPKELRIHV
                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                          64.6%;
                                                                                                                                                                                                                                                                                                                                                                                                           49; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                          Score 1048.5; DB 4; Pred. No. 2.5e-98;
                                                                                                                                                                                                                                                                                                                                                                                                             61;
                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                             ω
--
                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                     259
                                                                                                                                                                                                                                                                                                                                                       80
```

Application US/09199637A

```
APPLICANT: TSONGALIS, JOHN
TITLE OF INVENTION: VIRULENCE-ASSOCIATED NUCLEIC ACID
ITITLE OF INVENTION: VIRULENCE-ASSOCIATED NUCLEIC ACID
ITITLE OF INVENTION: SEQUENCES AND USES THEREOF
FILE REFERENCE: 00786/361002
CURRENT APPLICATION NUMBER: US/09/199,637A
CURRENT FILING DATE: 1998-11-25
PRIOR APPLICATION NUMBER: 60/066,517
PRIOR APPLICATION NUMBER: 60/066,517
PRIOR FILING DATE: 1997-11-25
NUMBER OF SEQ ID NOS: 437
SOFTWARE: FASTSEQ for Windows Version 4.0
SEQ ID NO 429
TUPOE: NOW:
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
PRIOR APPLICATION NUMBER: US 60/074,768
PRIOR FILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR PILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 21399
LENGTH: 368
                                                                                                                                                                                                                                       US-09-252-991A-21399
, Sequence 21399, Application US/09252991A
, Patent No. 6551795
; GENERAL INFORMATION:
, APPLICANT: Marc J. Rubenfield et al.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; TYPE: PRT ; ORGANISM: Pseudomonas aeruginosa US-09-199-637A-429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches 198;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                  TITLE OF INVENTION: NUCLEIC TITLE OF INVENTION: AERUGIN FILE REFERENCE: 107196.136
                                                                                                                                                                                                                                                                                                                                                                                                               333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       215 DALRAKFPQIQGPRKNDICYATQNRQDAVKELADQCDMVLVVGSPNSSNSNRLRELAERM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121 HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      96 DQVPDNVIVIFSAHGVSQAVRKEAEGRGLKVFDATCPLVTKVHKEVVRYSRDGHECVLIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61 SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      36 MQIKLANPRGFCAGVDRAIBIVNRALDVFGPPIYVRHEVVHNKFVVDNLRQRGAIFVBEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 MQIVLANDRGFCAGVDRAIBIVDQAIBAFGADIYVRHEVVHNRTVVDGLKQKGAVFIBBL 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6355411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                   EEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HEGHPEVEGTMGOYD-ASNGGAIYLVEDEADVAALEVRKPEALHYVTOTTLSMDDTSKVI
                                                                                                                                                                                                   Marc J. Rubenfield et al.

VENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING
VENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                                                                             EENITESMPKELR 345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GTPAYLIDGAEDMQRGWFDGVRRIGITAGASAPEVLVRGVIAQLREWG--ASEEQELEGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Cao,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Tan,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ausubel, Frederick
Goodman, Howard M.
Rahme, Laurence G.
Mahajan-Miklos, Shalina
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Drenkard, Eliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Man-Wah
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    63.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               %; Score 1028.5;
b; Pred. No. 2.9e
49; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5; DB 4; Length 349;
.9e-96;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     63; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 w
••
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                           TO PSEUDOMONAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N
```

```
CURRENT APPLICATION NUMBER: US/09/198,452A; CURRENT FILING DATE: 1998-11-24; NUMBER OF SEQ ID NOS: 6849; SEQ ID NO 1090; LENGTH: 310; TYPE: PRT ORGANISM: Chlamydia pneumoniae US-09-198-452A-1090
Ś
                                         몽
                                                                                Q
                                                                                                                                밁
                                                                                                                                                                   S
                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 4
US-09-198-452A-1090
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-21399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity
Matches 198; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 1090, Application US/09198452A Patent No. 6559294
                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                             Query Match 40.9%; Score 663; DB 4; Length 310; Best Local Similarity 45.0%; Pred. No. 3.7e-59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE OF INVENTION: Chlamydia pneumoniae genomic sequence and polypeptides, fragment; TITLE OF INVENTION: thereof and uses thereof, in particular for the diagnosis, preventing of Invention: and treatment of infection FILE REFERENCE: 9710-003-999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ENERAL INFORMATION:
APPLICANT: Griffais, R.
  242 KPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGIE 301
                                           178
                                                                                                                                                                                                                                                                                                                                                                                          143; Conservative
                                                                                                                                123 KKHVEVIGIVGEVPB-----HÍTVVEKVADVEALPFSSDTPLFÝITQTTLSLDDVQEISS 177
                                                                                                                                                                       122 AGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMVD 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 115 DQVPDNVIVIFSAHGVSQAVRKEAEGRGLKVFDATCPLVTKVHMEVVRYSRDGHECVLIG
                                                                                                                                                                                                                   63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            <u>გ</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        55 MQIKLANPRGFCAGVDRAIBIVNRALDVFGPPIYVRHBVVHNKFVVDNLRQRGAIFVBEL
                                                                                                                                                                                                                                                                                                                                             2 QIVLANPRGECAGVDRAIEIVDQAIEAEGAPIYVRHEVVHNRTVVDGLKQKGAVFIEELS 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                          DVPVGSYLIFSAHGVSKEVQQEABERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGH 121
                                                                                                                                                                                                                                                                                                   KLILCNPRGFCSGVVRAIQVVEVALEKWGAPIYVKHEIVHNRHVVNALRAKGAIFVEELV 62
                                           ALLKRYPSIITLPSSSICYATTNRQKALRSVLSRVMYYYVVGDVNSSNSNRLREVALRRG 237
                                                                                                                                                                                                                   DVPEGERVIYSAHGIPPSVRABAKARKLIDIDATCGLVTKVHSAAKLYASKGYKIILIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SDYPYGSYLIFSAHGYSKEYQQEAEERQLTVFDATCPLVTKVHMQYAKHAKQGREVILIG
                                                                                ALREOFPSIKEOKKODICYATONRODAVHDLAKISDLILVVGSPNSSNSNRLREIAVOLG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BEKVVFSIPKBLK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GTPAYLIDGAEDMQRGWFDGVRRIGITAGASAPEVLVRGVIAQLREWG--ASEEQELBGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQBVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DALRAKFPQIQGPRKNDICYATQNRQDAVKELADQCDMVLVVGSPNSSNSNRLRELAERM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DALREGEPSIKEGKKODICYATGNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BENITFSMPKELR 364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HEGHPEVEGTMGQYD-ASNGGATYLVEDEADVAALEVRKPEALHYVTQTTLSMDDTSKVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63.4%; Score 1028.5; DB ilarity 63.3%; Pred. No. 3.2e-96; Conservative 49; Mismatches 63
                                                                                                                                                                                                                                                                                                                                                                                          59; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 4;
                                                                                                                                                                                                                                                                                                                                                                                          98; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 368;
                                                                                                                                                                                                                                                                                                                                                                                          18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ω
                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                   122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               60
```

₹3 1.5

```
Ş
                                                                                밁
                                                                                                                      Ś
                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 5
US-09-107-532A-6431
                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                                                                                                        NAME/KEY: misc feature
LOCATION: (B) LOCATION 1...521
SEQUENCE DESCRIPTION: SEQ ID NO: 6431:
US-09-107-532A-6431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        문
                                                                                                                                                                                                                        Query Match
Rest Local Similarity 20...
63; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 6431, Application US/09107532A
Patent No. 6583275
Patent INFORMATION:
GENERAL INFORMATION:
APPLICANT: LYMM A DOUGETTE-Stamm
TITLE OF INVENTION: NUCLEIC ACID
ENTEROCOCCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               INFORMATION FOR SEQ ID NO: 6431: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATTORNEY/AGENT INFORMATION:
NAME: ARIMICALD, Pamela Deneke
REGISTRATION NUMBER: 40,489
REFERENCE/DOCKET NUMBER: GTC-012
TELECOMMUNICATION INFORMATION:
TELEPHONE: (781)893-5007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION DATA:
APPLICATION NUMBER: 60/085,598
FILING DATE: 14 May 1998
APPLICATION NUMBER: 60/051571
FILING DATE: July 2, 1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                     MOLECULE TYPE: protein HYPOTHETICAL: YES ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM:
MEDIUM TYPE: CD/ROM ISO9660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CORRESPONDENCE ADDRESS:
ADDRESSEE: GENOME THERAPEUTICS CORPORATION
                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQUENCES:
                                                                                                                                                             112 EVVDHTSLVEGNLMKIDSFIAELGOPSMDLYVYDLDENLIFKTHENSRNLIQTTRK---- 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           238
                                                                                                                   91 VFDATCPLVTKVHMQVAKHAKQGREVILIGHAGHPEVEG--TMGQYEKCTEGGGIYLVET 148
                                                                                                                                                                                                         38
FYDIRNKLL-----LTLIVLEVVSLILSSILGFFLSSYFLKPLKVLRDTMDTIRKDPQSD
                                     PEDVRNIKVNNPNDLAYVTQTTLSMTDTKVM-----
                                                                                                                                                                                                    EVVHNRTVVDGLKQKGAVFIEELSDVPVGSY-----LIFSAHGVSKEVQQEAEERQLT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VPADLINNPEDIDTNIVNHSGDIAMTAGASTPEDVVQACIRKL-----SSLIPGLQVE 290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NDIFAVEDVVFQLPKELR 308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH: 521 amino acids
TYPE: amino acid
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICATION NUMBER: US/09/107,532A FILING DATE: 30-Jun-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM: Enterococcus faecium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELEPHONE: (781)893-50
TELEFAX: (781)893-8277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OPERATING SYSTEM: <Unknown>
SOFTWARE: ASCII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER: PC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ZIP: 02354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COUNTRY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CITY: Waltham
STATE: Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STREET: 100 Beaver Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -BKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              USA
                                                                                                                                                                                                                                              7.2%; Score 116.5; DB 20.9%; Pred. No. 0.0035; tive 52; Mismatches 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         7310
                                                                                VTLEGKTGFLSIQPIYSKGTREKIGYAQSFYELSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        and David Bush
AND AMINO ACID SEQUENCES RELATING
FAECIUM FOR DIAGNOSTICS AND THERAF
                                                                                                                                                                                                                                                                                   DB 4; Length 521;
                                                                                                                                                                                                                                              104; Indels
                                  --- VDALREQFPSIKEQKKOD 197
                                                                                                                                                                                                                                              83;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AND THERAPEUTICS
                                                                                                                                                                                                                                            Gaps
                                                                                206
                                                                                                                                                                                                      90
```

US-08-198-446B-19

Sequence 19, Application US/08198446B
Patent No. 5674996
GENERAL INFORMATION:
APPLICANT: Hartwell, Leland H.
APPLICANT: Weinert, Ted A.
APPLICANT: Plon, Sharon E.

RESULT 7

```
유
                                     S
                                                                          밁
                                                                                                             S
                                                                                                                                                      맑
                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                문
                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; ORGANISM: Staphylococcus epidermidis US-09-134-001C-5024
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-134-001C-5024
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION NUMBER: US 60/064,964
PRIOR FILING DATE: 1997-11-08
PRIOR APPLICATION NUMBER: US 60/055,779
PRIOR FILING DATE: 1997-08-14
NUMBER OF SEQ ID NOS: 5674
SEQ ID NO 5024
LENGTH: 494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 5024, Application US/09134001C Patent No. 6380370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Lynn Doucette-Stamm et al TITLE OF INVENTION: NUCLEIC ACID AND TITLE OF INVENTION: EPIDERWIDIS FOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CURRENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILE REFERENCE: GTC-007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: PRT
  308
                                       289
                                                                            248
                                                                                                                 240
                                                                                                                                                         188
                                                                                                                                                                                              194
                                                                                                                                                                                                                                     128
                                                                                                                                                                                                                                                                          142
                                                                                                                                                                                                                                                                                                                                                       112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 295 RE 296
                                                                                                                                                                                                                                                                                                                72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER: US/09/134,001C FILING DATE: 1998-08-13
                                                                                                                                                                                                                                                                                                                                                                                            14 KESLTFDDVLLIPAASDVLPSDVDLSVKLSDKI-KLNIPVISAGMDTVTESKMAIAM-AR 71
                                                                                                                                                                                                                                                                                                                                                                                                                               52 KGAVFIEELSDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAK 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         64;
                                                                          AGVDALIIDTAHGHSKGVINQVKHIKETYPEITVVAGNVATAEATRALFEAGADVVKVGI 307
                                                                                                               LGKPAYLIDT-----YQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWG 288
                                                                                                                                                         KIEKLPLVENGRLEGLITIKDIEKVLEFPYAAKDEHGRLLAAAAIGTSKDTEIRAQKLVE
                                                                                                                                                                                                                                                                        GIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTD----TKVMVDALREQFPSIKEQ 193
                                                                                                                                                                                                                                                                                                                                                     QGREVILIGHAG-----
ĠPGSICTTRVVAGVĠVPQITAVYDCATEARKHGKA
                                     GE----TTSVRENSGIEE-KVVFSIPKELKKHMQA 318
                                                                                                                                                                                          KKDDICYATONROD---AVHDLAKISDL-----ILVVGSPNSSNSNRLR-EIAVO 239
                                                                                                                                                                                                                                     GVPIVDNQEDRKLIGILTNRDLRFIEDFSIKISDVMTKDNLITAPVGTTLDEABAILQKH 187
                                                                                                                                                                                                                                                                                                                QGGLGVIHKNMGVEEQADEVQKVKRSENGVISNPFFLTPEESVYEAEALMGKYRI----S 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            즶
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IEGHLSLLNRWGKDDPEILEESLSASMQBISRMKSLVQEMLDLSRAEQVDVHYANBTTKG 371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IDTYQDLKQDW-LEGIEVVGVTAGASAPEV----LVQEVIDQLKA-----WGGETTSV 294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IHMPEIDTNDELADLAEIFNEML-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLR-----BIAVQLGKPAYL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6.4%; Score 104; DB 4; Length 494; ilarity 19.1%; Pred. No. 0.06; Conservative 63; Mismatches 134; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AMINO ACID SEQUENCES RELATING DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                       -----HP----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -DRMRLYIBQQEQFVBDVSHELRTPVAI 311
                                                                                                                                                                                                                                                                                                                                                     ---EVEGIMGQYEXCTEGG 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         74;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TO STAPHYLOCOCCUS
                                                                                                                                                           247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       12;
```

```
RESULT 8
US-08-870-693-19
                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                맑
                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-08-198-446B-19
                                                                     Sequence 19, Application US/08870693
Patent No. 5866338
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ZIP: 98101-2347
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTMARE: PATENTIA Release #1.0, V.
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEFAX: 206-224-0779 INFORMATION FOR SEQ ID NO:
                                  APPLICANT:
 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MOLECULE TYPE:
DESCRIPTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE/DOCKET NUMBER: FHITELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Groudine, Mark T.
TITLE OF INVENTION: Cell Cycle Checkpoint
NUMBER OF SEQUENCES: 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CORRESPONDENCE ADDRESS:
ADDRESSEE: Christens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME: Sheiness, Diar REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: US/0 FILING DATE: 18-FEB-1994 CLASSIFICATION: 536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ENGIH:
                                                                                                                                                                                                    261
                                                                                                                                                                                                                                                                                                               230
                                                                                                                                                                                                                                                                                                                                                    380
                                                                                                                                                                                                                                                                                                                                                                                      173
                                                                                                                                                                                                                                                                                                                                                                                                                         123
                                                                                                                                                                                                                                                                                                                                                                                                                                                          123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ч
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        34 YVRHE---VVHNRTVVDGLKQKGAVFIEELSDVPVGSYLIFSA-----HGVS------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                78 -----KEVQQEAE---ERQLTVFDATCPLVTKVHMQVAKHAKQGREVI--LIGHA 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Seattle
                                                                                                                                                                                                                                       GGETTSVRENSGIEEKVVFSIPKE 311
                                                                                                                                                                                                                                                                                                             SNRLREIAVQLGKP--AYLIDTYQDLKQDWLEGIBVVGVTAGASAPEVLVQEVIDQLKAW 287
                                                                                                                                                                                                                                                                                                                                                  FTDVKQVKDQIVNN9----ELPEEDIIGVSRKTALNVEELLLPAIIDRIPPPTGRPD---
                                                                                                                                                                                                                                                                                                                                                                                 MTDTKVMVDALREQFPSIKEQKKDDICYATQNRQDAVHDL---AKISDLILVVGSPNSSN 229
                                                                                                                                                                                                                                                                                                                                                                                                                      GHVDFRGEVSRSYASC--GGAILLVDASQGIQAQTVAN-FYLAFSLGLKLIPVINKIDLN 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                          GHPEVEGTMGQ-YEKCTEGGGIYLVETPEDVRNLKVNNPNDLAY------VTQTTLS 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             THVIDENARNKQVLDKLEVERBRGITIKAQTCSM-----FYKDKRTGKNYLLHLIDTP 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       YKRHAYFLRYNHTTTPAQKLQA-----QIEQIPLENYRNFSIVAHVDHGKSTLSDRLLEI 69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         amino acid
                                                                                                                                                                                                                                                                            -----KPFRALLVDSWYD----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ΨÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       E: Christensen O'Connor Johnson
1420 Fifth Ave., Suite 2800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           586 amino acids
Groudine, Mark T.
                                  Hartwell, Leland H. Weinert, Ted A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      USA
                   Weinert, Ted
Plon, Sharon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        206-682-8100
                                                                                                                                                                                                    VRKN----DKVICAQTKE 274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein
yeast MEC3 protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Diana K.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US/08/198,446B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         35,356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             46;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FHCR17537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 103; DB 1; Length 586; Pred. No. 0.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             97;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels 110;
                                                                                                                                                                                                                                                                          -AYLGAVLLVNIVDGF--- 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          77
```

```
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: prote
; DESCRIPTION: yeast
US-08-870-693-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FILING DATE: May 12, 1993
APPLICATION NUMBER: US 07/
FILING DATE: May 14, 1992
APPLICATION NUMBER: US 07/
FILING DATE: May 12, 1992
ATTORNEY AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ZIP: 98101-2347
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILING DATE:
CLASSIFICATION: 536
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFTWARE: Patentin Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQUENCES: 1:
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME: Sheiness, Diana K. REGISTRATION NUMBER: 35, REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STREET: 1420 r
CITY: Seattle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICATION NUMBER: US 08/198,446 FILING DATE: February 18, 1994 APPLICATION NUMBER: PCT/US93/04458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGIH:
                                                                                                                                                                                              173 MTDTKVMVDALREOFPSIKEOKKODICYATONRODAVHDL---AKISDLILVVGSPNSSN 229
                                                                                                                                                                                                                                         123 GHVDFRGEVSRSYASC--GGAILLVDASQGIQAQTVAN-FYLAFSLGLKLIPVINKIDLN
                                                                                                                                                                                                                                                                                                                        70
                                                                                                                                                                                                                                                                                                                                                                                                     15 YKRHAYFLRYNHTTTPAQKLQA-----QIEQIPLENYRNPSIVAHVDHGKSTLSDRLLEI
                                                                                                                                                                                                                                                                                                                                                                                                                                           34 YVRHE--VVHNRTVVDGLKQKGAVFIEELSDVPVGSYLIFSA----HGVS-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     6.3%;
Similarity 21.9%;
                                                                                                                     SNRLREIAVQLGKP--AYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAW
                                                                                                                                                                                                                                                                             GHPEVEGTWGQ-YEKCTEGGGIYLVETPEDVRNLKVNNPNDLAY------VTQTTLS 172
                                                                                                                                                                                                                                                                                                                    THVIDPNARNKQVLDKLEVERERGITIKAQTCSM-----FYKDKRTGKNYLLHLIDTP 122
                                      GGETTSVRENSGIBEKVVFSIPKE 311
                                                                                                                                                            FTDVKQVKDQIVNNF----ELPEEDIIGVSRKTALNVEELLLPAIIDRIPPPTGRPD---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1420 Fifth Ave.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      586 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                206-682-8100
206-224-0779
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
--VRKN----DKVICAQTKE 274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Christensen O'Connor Johnson Kindness PLLC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      May 14, 1992
May 14, 1992
TIMBER: US 07/882,051
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             UMDELL.
May 12, 1993
"TIMBER: US 07/884,426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       yeast MEC3 protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          protein
                                                                                                                                                                                                                                                                                                                                                          -KEVQQEAE---ERQLTVFDATCPLVTKVHMQVAKHAKQGREVI--LIGHA 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Cell Cycle Checkpoint
                                                                               KPFRALLVDSWYD--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US/08/870,693
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          35,356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; Score 103; DB; Pred. No. 0.1; 46; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Suite 2800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FHCR110798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  97;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 586;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels 110;
                                                                                 AYLGAVLLVNIVDGF---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                       69
                                                                                                                                                                                                                                                                                                                                                                                                                                                77
                                                                                                                                                              232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      18;
```

S 밁 δ 몽 Ś Ŗ 8 엉 8 B Q

```
US-08-467-822-35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; SEQ ID NO 4705
; LENGTH: 540
; TYPE: PRT
; ORGANISM: Staphylococcus epidermidis
US-09-134-001C-4705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-134-001C-4705
                                                                                                                                                                                                                                                                                                                                      Patent No.
                                                                                                                                                                                                                                                                                                                                                              Sequence 35,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 4705, Application US/09134001C Patent No. 6380370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL
                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION NUMBER: US 60/064,964
PRIOR FILING DATE: 1997-11-08
PRIOR APPLICATION NUMBER: US 60/055,779
PRIOR FILING DATE: 1997-08-14
NUMBER: OF SEQ ID NOS: 5674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Lynn Doucette-Stamm et al TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO STAPHYLOCOCCUS TITLE OF INVENTION: EPIDERMIDIS FOR DIAGNOSTICS AND THERAPEUTICS FILE REFERENCE: GTC-007
CURRENT APPLICATION NUMBER: US/09/134,001C
CURRENT FILING DATE: 1998-08-13
                                                                                                                                  APPLICANT: Labigne, Agnes
APPLICANT: Sauerbaum, Sebastien
APPLICANT: Ferrero, Richard L.
APPLICANT: Thiberge, Jean-Michel
TITLE OF INVENTION: IMMUNOCENIC COMPOSITIONS AGAINST
TITLE OF INVENTION: HELICOBACTER INFECTION, POLYPEPTIDES FOR USE IN THE
TITLE OF INVENTION: COMPOSITIONS, AND NUCLEIC ACID SEQUENCES ENCODING SAID
TITLE OF INVENTION: POLYPEPTIDES
                                                                                              CORRESPONDENCE ADDRESS:
                                                                                                                   NUMBER OF SEQUENCES:
                                                 ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     310 DASLDML--GTANKVEVTKDHTTVVD-----GNGDENNIDARVGQIKAQIEETDSEPDKE 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             260 NIVLNRMRGTETAVAVKAPGEGDRRKAMLEDLAI-----LTGAQVITDDLGLE---LK 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            171 DGVITIEESNGFNTELEVVEGMQFDRGYQSPYMVIDSDKMIABLERPYILVTDKKISSFQ 230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 94 ATCPLVTKVHMQVAKHAKQGREVILIGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVR 153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    52 KGAVFIEELS------DVPVG-----SYLIFSAHGVSKEVQQE---AEERQLTVFD 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     σ
                                                                                                                                                                                                                                                                                                                                        5, Application US/08467822
5843460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QKVSEIKAEGDVETGVNIVLKALQAPVRQIAENAGLEGSIIV----ERLKHAEA 472
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NLKVNNP---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ANPVGLRQGIDKAVQVAIEALHEISQKVENKNEIAQVGAISAADEEIGRYISEAMDKVGN 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EVIDOLKAWGGETTSVR----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EQXXDDICYATONRODAVHDLAKISDLILVVGSPNSSNSN-RLREIAVQ------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DILPLEQV-----VQASRPILIVA----DEVEG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KITESLGKLPGGVAVNQVWGGSETELKERKLRIEDALNSTRAAVEEGIVAGGGTALVNIY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -----LGKPAYLIDTYQ------DLK-----QDWLEGIEVV---GVTAGASAPEVLVQ 278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTV-------VDGLKQ 51
                     E: Finnegan, Henderson,
B: Dunner
1300 I Street, N.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6.3%; Score 101.5; DB 4; Conservative 70; Mismatches 119;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -----NDLAYVTQTTLSMTDTKVMVDALREQFPSIK 191
                                                                      Farabow, Garrett &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ENSGIEEKVVFSIPKELKKHMOA 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 4; Length 540;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             153;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -----DALT 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19
US-08-432-697-35
; Sequence 35, Application US/08432697
; Patent No. 6248330
                                                                  RESULT 11
                                                                                                                                      유
                                                                                                                                                                        8
                                                                                                                                                                                                                            무
                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                              문
                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; MOLECULE TYPE: protein US-08-467-822-35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEFAX: (202) 408-4400 INFORMATION FOR SEQ ID NO: :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATTORNEY/AGENT INFORMATION:
NAME: Meyers, Kenneth J.
REGISTRATION NUMBER: 25,146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ZIF. 20005-3315

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PAtentin Release #1.0, Version
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE/DOCKET NUMBER: 03
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION DATA:
APPLICATION NUMBER:
FILING DATE: 02-MAY-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/447,177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: FILING DATE: 06-JUN CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE: 19-MAY-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STATE: D.C
                                                                                                                                                                                                                            402
                                                                                                                                                                               283
                                                                                                                                                                                                                                                                                                                 344
                                                                                                                                                                                                                                                                                                                                                       185 EQFPSIKEQKKDDICYATQNRQDAVHDLAKISD--LILVVGSPNSSNSNRLR---
                                                                                                                                                                                                                                                                                                                                                                                                      290 DMAIATGGAVFGEEGLTLNLEDVQ-----PHDLGKVGEVIVTKDDAMLLKGKGDKAQIE 343
                                                                                                                                                                                                                                                                                                                                                                                                                                                 134 YEKCTEGGGIY----LVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMVD-----ALR 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              230 QSIVPALEIANLVLNRLKVGLQVVAVKAPGFLVLNRLKVGLQVVAVKAPGFGDNRKNQLK 289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        110 ANPVEIRRGVDLAVDAVIAELKKOSKPVTTPEEIAQVATISANGDKEIGNIISDAMKKVG 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             51 QKGAVFI-----EELSDVP-----VGSYLIFSAHGVSKEVQQE---AEERQLTVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      93 DATCPLV-----TKVHMQVA------KHAKQGREVILIGHAGHPEVEGTMGQ 133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6 ANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHBVVHNRT------VVDGLK---
                                                                                                                                                                               QLKAWGGETTSVRENSGIEEKVVFSIPKELKKHMQA 318
                                                                                                                                                                                                                                                                                                                 KRIQBIIEQL--DVTTSEYEKEKLNERLAKLSDGVAVLKVGGTSDVEVNEKKDRVTDALN 401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               amino acid
                                                                                                                                                                                                                       ATRAAVEEGIVLGGGCALLRCIPALDSLTPANEDQKIGIEIIKRTLKIPA
                                                                                                                                                                                                                                                                    -----EIAVQLGKPAYL-----IDTYQDLXQDWLEGIEVVGVTAGASAPEVLVQEVID 282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RKGVITVKDGKTLNDELEIIEGMKFDRGYISPYFINTSKGQKCEFQDAYVLLSEKKISSI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  547 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                      ----MTIAKNAGVDGSLI----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (202)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  06-JUN-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   02-MAY-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6.2%; Score 101; DB 2; Length 547; 18.2%; Pred. No. 0.14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            408-4000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US/08/467,822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US 08/432,697
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  65; Mismatches 143;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        03495.0137-02000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels 116;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
```

234

451

92

50

16;

밁

452 ----

-----WTIAKWAGVDGSLI-----VEKIMQS 472

```
Ş
                                                                                      Ś
                                                                                                                               멍
                                                                                                                                                                                                                                                                                                                                                                                                                          멼
                                                                                                                                                            Ś
                                                                                                                                                                                                     뫉
                                                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                              맑
                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                    망
                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; MOLECULE TYPE: US-08-432-697-35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELEFAX: (202) 408-4400
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Ferrero,
APPLICANT: Thiberge,
TITLE OF INVENTION:
TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE CHARACTERISTICS:
LENGTH: 547 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CLASSIFICATION: 424
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE: PatentIn Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRANDEDNESS: single TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity 18.2 es 72; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME: Meyers, Kenneth J.
REGISTRATION NUMBER: 25,
REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILING DATE: 02-MAY-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE: Dunner
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADDRESSEE:
                                                                                                                                                                  185
                                                                                                                                                                                                     290
                                                                                                                                                                                                                                                                            230
                                                                                                                                                                                                                                                                                                                                                                                                                          110
                 283 QLKAWGGETTSVRENSGIEEKVVFSIPKELKKHMQA 318
                                                    402 ATRAAVEEGIVLGGGCALLRCIPALDSLTPANEDQKIGIEIIKRTLKIPA-
                                                                                                                             344 KRIQEIIEQL--DYTTSEYEKEKLNERLAKLSDGVAVLKVGGTSDVEVNEKKDRVTDALN 401
                                                                                                                                                                                                                                      134 YEKCTEGGGIY----LVETPEDVRNLKVNNPNDLAYVTQFTLSMTDTKVMVD-----ALR 184
                                                                                                                                                                                                                                                                                                                                                170 RKGVITVKDGKTLNDELEIIEGMKFDRGYISPÝFINTSKGQKCEFQDAYVLLSEKKISSI 229
                                                                                                                                                                                                                                                                                                                 93
                                                                                                                                                                                                                                                                                                                                                                                   51 QKGAVFI------EELSDVP-----VGSYLIFSAHGVSKEVQQE---AEERQLTVF 92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                            6 ANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRT------VVDGLK---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20005-3315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  amino acid
                                                                                                                                                                                                                                                                                                                 DATCPLV--
                                                                                                                                                                EQFPSIKEQKKDDICYATQNRQDAVHDLAKISD--LILVVGSPNSSNSNRLR-----
                                                                                                                                                                                                     DMAIATGGAVFGEEGLTLNLEDVQ-
                                                                                                                                                                                                                                                                            QSIVPALEIANLVLNRLKVGLQVVAVKAPGFLVLNRLKVGLQVVAVKAPGFGDNRKNQLK 289
                                                                                                                                                                                                                                                                                                                                                                                                                        ANPVEIRRGVDLAVDAVIAELKKQSKPVTTPEBIAQVATISANGDKEIGNIISDAMKKVG 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ย
ด
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Saura, Seura I.
Ferrero, Richard L.
Ferrarde, Jean-Michel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1300 I Street, N.W
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Finnegan, Henderson,
                                                                                        -BIAVQLGKPAYL----IDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVID 282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (202)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                18.2%;
::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          408-4000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IMMUNOGENIC COMPOSITIONS AGAINST
HELICOBACTER INFECTION, POLYPEPTIDES FOR USE IN THE
COMPOSITIONS, AND NUCLEIC ACID SEQUENCES ENCODING SAID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              POLYPEPTIDES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US/08/432,697
                                                                                                                                                                                                                                                                                                               --TKVHMQVA---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             25,146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 101; DB 3
Pred. No. 0.14;
65; Mismatches 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               03495.0137-00000
 ::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Farabow,
                                                                                                                                                                                                   PHDLGKVGEVIVTKDDAMLLKGKGDKAQIE 343
                                                                                                                                                                                                                                                                                                               ---KHAKQGREVILIGHAGHPEVEGTMGQ 133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 3; Length 547;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               143;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Garrett
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels 116;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                    451
                                                                                                                                                                234
                                                                                                                                                                                                                                                                                                                                                                                                                                                              50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 16;
```

```
문
                        Ş
                                                             밁
                                                                                          5
                                                                                                                               밁
                                                                                                                                                             Ş
                                                                                                                                                                                                                                                             TOPOLOGY: 1i; MOLECULE TYPE: US-08-466-248-35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-08-466-248-35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 12
                                                                                                                                                                                              Matches
                                                                                                                                                                                                             Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 35,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRIOR APPLICATION NUMBER: US 08/4
APPLICATION NUMBER: US 08/4
PILING DATE: 19-MAY-1995
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
PILING DATE: 02-MAY-1995
PILING DATE: 02-MAY-1995
                                                                                                                                                                                                                                                                                                                                                                            TELEFAX: (202) 408-4400 INFORMATION FOR SEQ ID NO: 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                          REGISTRATION NUMBER: 25,146
REFERENCE/DOCKET NUMBER: 03
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER READABLE MEDIUM TYPE: FI
                                                                                                                                                                                                                                                                                                                                                              SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOPTWARE: PatentIn Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                             STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                            TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE: Dunner
                                                                                                                                                                                                                                                                                                                                           LENGTH:
                                                              170 RKGVITVKDGKTLNDELEIIEGMKFDRGYISPYFINTSKGQKCEFQDAYVLLSEKKISSI 229
230 QSIVPALEIANLVLMRLKÝGLÓVVAVKAPGFLVLMRLKVGLOVVAVKAPGFGDNRKNOLK 289
                                                                                                                             110 ANPVEIRRGVDLAVDAVIAELKKQSKPVTTPEEIAQVATISANGDKEIGNIISDAMKKVG
                             93 DATCPLV-----TKVHMQVA------KHAKQGREVILIGHAGHPEVEGTMGQ 133
                                                                                              51 QKGAVFI-----BELSDVP------VGSYLIFSAHGVSKEVQQB----AEERQLTVF
                                                                                                                                                             6 ANPRGECAGVDRAIBIVDQAIBAEGAPIYVRHEVVHNRT------VVDGLK---
                                                                                                                                                                                              72;
                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20005-3315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Washington
                                                                                                                                                                                                                                                                                                                           amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Meyers, Kenneth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           <del>ا</del>.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Application US/08466248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1300 I Street, N.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           USA
                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Thiberge, Jean-Michel
VENTION: IMMUNOGENIC COMPOSITIONS AGAINST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sauerbaum, Sebastie
Ferrero, Richard L.
                                                                                                                                                                                                                                                                                            linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IBM PC compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Finnegan, Henderson,
                                                                                                                                                                                                                                                                                                                                           amino acids
                                                                                                                                                                                                                                                                                                                                                                                                             (202)
                                                                                                                                                                                                                                                                          protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           06-JUN-1995
                                                                                                                                                                                                                                                                                                          single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FORM:
                                                                                                                                                                                                            18.2%;
                                                                                                                                                                                                                                                                                                                                                                                                             408-4000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPOSITIONS,
POLYPEPTIDES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Agnes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HELICOBACTER INFECTION,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US 08/447,177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US/08/466,248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sebastien
                                                                                                                                                                                                                                                                                                                                                                            3
5
::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             08/432,697
                                                                                                                                                                                            65;
                                                                                                                                                                                                                                                                                                                                                                                                                                             03495.0137-02000
                                                                                                                                                                                                          Score 101; DB 3; Length 547; Pred. No. 0.14;
                                                                                                                                                                                              Mismatches 143;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AND NUCLEIC ACID SEQUENCES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Farabow,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Garrett
                                                                                                                                                                                              Indels 116;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ENCODING
                                                                                                                                                                                              Gaps
                                                                                               92
                                                                                                                               169
                                                                                                                                                             50
```

1

53

Gaps

13

```
;
US-08-144-121-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-08-144-121-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                              FILING DATE: 27-OCT-1993
CLASSIFICATION: 424
ATTORNEY/AGENT INFORMATION:
NAME: Myers, Paul L.
REGISTRATION NUMBER: 35,965
REFERENCE/DOCKET NUMBER: (MGH
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 227-7400
                                                                                                                                                                                                                                                                                                                                                                                          TELEPAX: (617) 227-594
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Burgeson, Robert E.
APPLICANT: Wagman, David W.
TITLE OF INVENTION: Blk CHAIN OF LAMININ AND METHODS OF
                                                           LOCATION:
FEATURE:
                                                                                                               FEATURE:
                                                                                                                                                                                                                                                                                                  MOLECULE TYPE: peptide FRAGMENT TYPE: internal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
                                                                                                                                                                         FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STREET: STON
                                       NAME/KEY:
                                                                                             NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                   NAME/KEY:
                                                                                                                                                                                                         NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: US/08/144,121 FILING DATE: 27-OCT-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDIUM TYPE:
                                                                                                                                                                                         LOCATION:
                                                                                                                                                                                                                                                                                                                                          TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADDRESSEE:
                                                                                                                                                                                                                                              LOCATION:
                                                                                                                                                                                                                                                              NAME/KEY:
                                                                                                                                   COCATION:
                                                                                                                                                                                                                                                                                                                                                                          ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                134 YEKCTEGGGIY----LVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMVD-----ALR
                                                                                                                                                                                                                                                                                                                                          amino acid
CY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATRAAVEEGIVLGGGCALLRCIPALDSLTPANEDQKIGIEIIKRTLKIPA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EQFPSIKEQKKDDICYATQNRQDAVHDLAKISD--LILVVGSPNSSNSNRLR---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DMATATGGAVFGEEGLTLNLEDVQ-----PHDLGKVGEVIVTKDDAMLLKGKGDKAQIE 343
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QLKAWGGETTSVRENSGIEEKVVFSIPKELKKHMQA 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KRIQEIIEQL--DVTTSEYEKEKLNERLAKLSDGVAVLKVGGTSDVEVNEKKDRVTDALN 401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Application US/08144121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----EIAVQLGKPAYL-----IDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVID 282
                                                                                                                                                                                                                                                                                                                                                                            1196 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8: LAHIVE & COCKFIBLD
60 State Street, suite 510
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          United States
                                                                                                                                                                                     Domain
251..437
                                                                                                                                                                                                                                             Domain
1..250
                                                                         808..840
                                                                                                                                                   Domain
                                     Domain
                                                                                             Domain
                                                                                                                               438..807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   --MTIAKNAGVDGSLI-----VEKIMOS 472
                                                                                                                                                                                                                                                                                                                                                                                                                                227-5941
                                                                                                                                                                                                                                                                                                                                                                                                                  4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (MGH-0780.0) MGP-021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ---- 234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 14
US-08-735-893-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 4, Application US/08735893
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 6.1%;
Best Local Similarity 19.8%;
Matches 52; Conservative 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
APPLICANT: Burgeson, Robert E.
APPLICANT: Wagman, David W.
TITLE OF INVENTION: BIK CHAIN OF LAMININ AND METHODS OF USE
NUMBER OF SEQUENCES: 14
                                                                                                                                                                                     TELEFAX: (617) 227-59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
FEATURE:
                                                                     MOLECULE TYPE:
FRAGMENT TYPE:
                                                                                                                                                                                                                                           REFERENCE/DOCKET NUMBER: (M
                                                                                                                                                                                                                                                                            ATTORNEY/AGENT INFORMATION:
NAME: Myers, Paul L.
REGISTRATION NUMBER: 35,965
                                                                                                                                                                                                                                                                                                                                      FILING DATE: 18-OCT-1996
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION UNMBER: US 08/144,121
FILING DATE: 27-OCT-1993
CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD
STREET: 60 State Street, suit
                                                           FEATURE:
                                                                                                                                                                     SEQUENCE CHARACTERISTICS:
                                     NAME/KEY:
                                                                                                             TYPE: amino acid
TOPOLOGY: linear
                                                                                                                                                                                                                           TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COUNTRY:
                                                                                                                                                 ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1044 TAASEETLFNASQRISELERNVE 1066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 934 VANEVLKMEMPSTPQQLQN----LTEDIRERVESLSQV-EVILQHSAADIARAEMLLEEA 988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121 HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNL--KVNNPNDLAYVTQTTLSMTDTKV 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   843 LVTVAHNAMQKAMDLDQDVLSALAEVEQLS-----KMVSEAKLR-ADEAKQSAEDILL 894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      69 LIFSAHGV---SKEVQQE-----AEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BOSTON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MV-DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIA 237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SGIEEKVVFSIPK---BLKKHMQ 317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KRASKSATDVKVTADMVKEALEEAEKAQVAA----EKAIKQADEDIQGTQNLLTSIESE 1043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----KTNATKEKMDK-----SNEELRNLIKQIRN-----FLTQDSADLDSIEA 933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VQLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVREN 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Massachusetts
                                                                                                                                                 1196 amino acids
                                                                                                                                                                                                       3: (617)
(617) 22
                 Domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     United States
                                                                           peptide internal
                                                                                                                                                                                                         227-5941
                                                                                                                                                                                                                           227-7400
                                                                                                                                                                                                                                                                                                                                                                                                                                                        us/08/735,893
                                                                                                                                                                                         4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            67; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               suite 510
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 99.5; DB 1;
Pred. No. 0.71;
                                                                                                                                                                                                                                                                (MGH-0780.1) MGP-021DV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              91;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 1196;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 15
US-08-797-358B-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ď,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ;
US-08-735-893-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 3, Application US/08797358B Patent No. 6268478 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
INFORMATION FOR SEQ ID NO: 3:
                                                          COMPOSED TOWN

CONSULTED TOWN

COMPUTER: IBM PC compatible

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: PATENTIN Release #1.0, Version #1.25

CURRENT APPLICATION NUMBER: 105/08/797,358B

PILING DATE: 11-Feb-1997

CLASSIFICATION NUMBER: US 60/011,491

PILING DATE: 12-FEB-1996

ATTORNEY/AGENT INFORMATION:

NAME: Campbell, Cathryn A.

REGISTRATION NUMBER: 9-CE 3165

REFERENCE/DOCKET NUMBER: 9-CE 3165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURE:
NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LOCATION:
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LOCATION: FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY:
                                                   TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE OF INVENTION: INTRACELLULAR VITAMIN D BINDING PROTEIN NUMBER OF SEQUENCES: 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1044 TAASEETLENASQRISELERNVE 1066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               934 VANEVLKMEMPSTPQQLQN----LIEDIRERVESLSQV-EVILQHSAADIARAEMLLEEA 988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     989 KRASKSATDVKVTADMVKEALEBAEKAQVAA-----EKAIKQADEDIQGTQMLLTSIESE 1043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121 HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNL--KVNNPNDLAYVTQTTLSMTDTKV 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         843 LVTVAHNAWQKAMDIDQDVLSALAEVEQLS-----KMVSEAKLR-ADEAKQSAEDIII- 894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              69 LIFSAHGV---SKEVOQE-----AEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     l Similarity 19.8
52; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SGIEEKVVFSIPK---BLKKHMQ 317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MV-DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIA 237
                                                                                                                                                                                                                                                                                                                                                                                                                            CITY: San Diego
STATE: California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VQLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVREN 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ----KTNATKEKMDK-----SNEELRNLIKQIRN----FLTQDSADLDSIEA 933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADDRESSEE: Campbell & Flores LLP
STREET: 4370 La Jolla Village Drive, Suite 700
                TELEPHONE: (619) 535-9001
TELEFAX: (619) 535-8949
                                                                                                                                                                                                                                                                                                                                                                                                         COUNTRY: United States
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Domain
841..1196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               808..840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       438..807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               251..437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     John
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     67;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 99.5; DB
Pred. No. 0.71;
7; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     91:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 1196;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
```

```
片
                              S
                                                                         片
                                                                                                           S
                                                                                                                                                                                     Ś
                                                                                                                                                                                                                             문
                                                                                                                                                                                                                                                                                                       문
                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                    片
                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-08-797-358B-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TOPOLOGY: unknown
MOLECULE TYPE: protein
SEQUENCE DESCRIPTION: SEQ ID NO: 3:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                         169
375
                                                                                                                                                                                                                                                                  132 GQYEKCTEGGGIYLVETPEDVRNLKVN------NPNDLAY------VTQ 168
                                                                                                                                                                                                                                                                                                         186 GLDR----RGAGERNVLIFDLGGGTFDV-----
                                                                                                                                                                                                                                                                                                                                                                                    131 BTAEAYLGQP--VKHAVITVPAYFNDSQRQATKDAGAIVGLNVLRIINEPTAAAI---AH
                                                                                                                                                                                                                                                                                                                                               75
                                                                                                                                                                                                                                                                                                                                                                                                                       24 QAIEAF-GAPIYVRHEVV-----HNRTVVDGLKQKGAVF---IEELSDVPVGSYLIFSAH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                         DVVLVGGSTR-
                                                                                                                                                                                       TILSMIDIKVMVDALREQ---PESIKEQKKDDICY-----ATQNRQDAVHDLAKIS 216
AAVQAAVLMGDKCEKVRDLLLLDVAPLSLGLETAGGVMTTLIQRNATIPTK 425
                                                                                                             DLILVVGSPNSSNSNRLREIAVQLGKPAYLIDTYQDLKQDWLEGIEV-----VGVTAG
                                                                                                                                                                                                                               GD----THLGG-----BDFDNRLVNHFVEEFRRKHRKDLSWNKRALRRLRTACERAKR
                                                                                                                                                                                                                                                                                                                                             GVSKEVQQEABERQLTVFD---ATCPLVTKVHMQVAKHAKQGREVILIGHAGHPEVBGTM 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGTH: 643 amino acids
TYPE: amino acid
                                  ASAPEVLV----QEVIDQL-----
                                                                                                                                                  TISSSTQATIEIDSIFEGVDFYTSITRARFEELCSDIFRSTLEPVBKGLRDAKLDKAXIH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRANDEDNESS: unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5.9%; Score 95.5;
21.9%; Pred. No. 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                           45;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                  ----KAWGGETTSVRENSGIEEK 303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5; DB 3;
0.67;
                                                                         IPRVQKLLQDPFNGKBLNKSINPDEAVAYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                             102;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 643;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels 127;
                                                                                                                                                                                                                                                                                                         ---SVLSIDAGVFEVKATA 225
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
```

Search completed: January 29, 2004, 15:57:09 Job time: 11.9804 secs

374 269 334 274

185 74 18;

(

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Total number
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                  Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                            743.
733
                                                        663
598.5
111
109
                                                                                                                                                                                                                                                                                                          Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Published Applications AA:*

1: /cgn2_6/ptodata/1/pubpaa/US07 PUBCOMB.pep:*

2: /cgn2_6/ptodata/1/pubpaa/PCT_NEW PUB.pep:*

3: /cgn2_6/ptodata/1/pubpaa/US06_NEW PUB.pep:*

4: /cgn2_6/ptodata/1/pubpaa/US06_PUBCOMB.pep:*

5: /cgn2_6/ptodata/1/pubpaa/US06_PUBCOMB.pep:*

6: /cgn2_6/ptodata/1/pubpaa/US08_NEW PUB.pep:*

7: /cgn2_6/ptodata/1/pubpaa/US08_NEW PUB.pep:*

8: /cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep:*

9: /cgn2_6/ptodata/1/pubpaa/US09B_PUBCOMB.pep:*

10: /cgn2_6/ptodata/1/pubpaa/US09B_PUBCOMB.pep:*

11: /cgn2_6/ptodata/1/pubpaa/US09C_PUBCOMB.pep:*

13: /cgn2_6/ptodata/1/pubpaa/US09C_PUBCOMB.pep:*

14: /cgn2_6/ptodata/1/pubpaa/US09C_PUBCOMB.pep:*

15: /cgn2_6/ptodata/1/pubpaa/US09C_PUBCOMB.pep:*

16: /cgn2_6/ptodata/1/pubpaa/US00C_PUBCOMB.pep:*

17: /cgn2_6/ptodata/1/pubpaa/US10C_PUBCOMB.pep:*

16: /cgn2_6/ptodata/1/pubpaa/US10C_PUBCOMB.pep:*

17: /cgn2_6/ptodata/1/pubpaa/US10C_PUBCOMB.pep:*

16: /cgn2_6/ptodata/1/pubpaa/US10C_PUBCOMB.pep:*

17: /cgn2_6/ptodata/1/pubpaa/US10C_PUBCOMB.pep:*

18: /cgn2_6/ptodata/1/pubpaa/US10C_PUBCOMB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     length: 0
length: 2000000000
  Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-941-947A-18
1623
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      January 29, 2004, 15:54:19; Search time 21.7073 Seconds (without alignments) 3044.503 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 789580 segs, 207824079 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MQIVLANPRGFCAGVDRAİE......GIEEKVVFSIPKELKKHMQA 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GenCore version 5.1.6 (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                          H
      1122015511
US-09-934-903-24
US-09-941-947A-18
US-09-975-719-429
US-10-156-761-10747
US-09-738-626-4643
US-09-712-363-271
US-09-712-363-28
US-10-289-762-1090
US-10-289-762-1090
US-10-289-762-1090
US-10-289-762-1090
US-10-289-762-1090
US-10-289-762-1090
US-10-289-762-1090
US-10-289-382-36
US-10-156-761-10047
US-09-712-363-382
US-10-369-493-1052
US-10-369-493-1052
                                                                                                                                                                                                                                                                                                          H
                                                                                                                                                                                                                                                                                                                                                                SUMMARIES
                                                                                                                                                                                                                                                                                                      Description
                                                                                                                              Sequence 24, Appl
Sequence 18, Appl
Sequence 429, App
Sequence 10747, A
Sequence 271, App
Sequence 188, App
Sequence 1990, Ap
                                                      Sequence
Sequence
Sequence
                                                                                                            Sequence
Sequence
Sequence
                      Sequence
Sequence
                                                    36, Appl
5, Appli
10047, A
282, App
```

45	44	43	42	41	40	39	38	37	36	35	4	نی) نیا	32	31	30	29	28	27	26	25	24	23	22	21	20	9	18	17	16
93	93	93	93	93	93	93.5	94	94	94	94.5	95.5	95.5	96	96.5	96.5	97	97.5	97.5	99.5	99.5	99.5	99.5	100.5	101	101	102	103	103	104
5.7	5.7	5.7	5.7	5.7	5.7	5. 8		5.8	5. 80	۰ 8	5.9	5. 9	5.9	5.9	5,9	6.0	6.0	6.0	6.1	6.1	6.1	6.1		6.2				6.3	6.4
573	573	573	573	573	563	547	573	496	496	759	977	330	952	1881	321	299	921	607	1786	1786	1786	1765	538	520	391	1382	553	433	869
15	12	12	12	10	12	12	10	15	15	12	12	12	12	12	φ	12	10	12	15	10	ψ	<u>ب</u> 5	12	12	12	10	12	φ	12
US-10-046-649-1	US-10-367-093-12	US-10-116-275-141	US-10-307-326-1	US-09-828-574-1	US-10-341-434-135	US-10-369-493-7917	US-09-847-637B-8	US-10-263-677-9	US-10-215-224-7	US-10-369-493-18629	US-10-342-136-2	US-10-369-493-23413	US-10-108-260A-3284	-585	US-09-815-242-13454	US-10-369-493-10700	US-09-738-626-5659	1	US-10-037-182-6	US-09-938-275-6	US-09-873-676-113	-182-	US-10-369-493-2950	US-10-369-493-2893	9-493-	US-09-729-653-2	32-585	US-09-815-242-10607	US-10-369-493-19983
1	12,	14	e 1,	Sequence 1, Appli	13	793		9	7,	Sequence 18629, A		23413,	e 3284,	Ø	Sequence 13454, A	Sequence 10700, A	5659,	19	'n	φ σ,	113,	ω,	e 2950,	Sequence 2893, Ap	20969,	e 2, App	e 733	Sequence 10607, A	Sequence 19983, A

ALIGNMENTS

```
SOFTWARE: Microsoft Office 97
SEQ ID NO 24
LENGTH: 318
TYPE: PRT
ORGANISM: Methylomonas 16a
US-09-934-903-24
                          S
                                                                    문
                                                                                                    S
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-934-903-24
                                                                                                                                     Query Match
Best Local Similarity
Matches 318; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 24, Application US/09934903 Patent No. US20020102690A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                             APPLICANT: Picataggio, Stephen
APPLICANT: Cheng, Qiong
TITLE OP INVENTION: Genes Involved in Isoprenoid Compounds Production
FILE REFERENCE: CL1646 US NA
FULLEATION NUMBER: US/09/934,903
CURRENT FILING DATE: 2001-08-22
PRIOR APPLICATION NUMBER: 60/229,907
PRIOR FILING DATE: September 1, 2001
                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Koffas, Mattheos
APPLICANT: Odom, J. Martin
APPLICANT: Schenzle, Andrea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 INFORMATION:
 61
                           61 SDYPYGSYLIFSAHGYSKEYQQEAZERQLTYFDATCPLYTKYHMQYAKHAKQGREYILIG
                                                                  SDVPVGSYLIFSAHGVSKEVQQEASERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Rouviere, Pierre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Tomb.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            No. US20020102690Alton, Kelley C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Schenzle, Andreas J.
                                                                                                                                  100.0%; Score 1623; DB 10; ilarity 100.0%; Pred. No. 2.5e-150; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Jean-Francois
                                                                                                                                                                          DB 10;
                                                                                                                                       Indels
                                                                                                                                                                     Length 318;
                                                                                                                                       .
                                                                                                                                       Gaps
                                   120
                                                                    60
                                                                                                        60
                                                                                                                                       0
```

S 밁 S 밁 S 밁

```
RESULT 2
US-09-941-947A-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 18, Ap
Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQ ID NO 18
LENGTH: 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -09-941-947A-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/09/941,947A
CURRENT FILING DATE: 2001-09-01
PRIOR APPLICATION NUMBER: 60/229,907
PRIOR FILING DATE: 2000-09-01
PRIOR APPLICATION NUMBER: 60/229,858
PRIOR FILING DATE: 2000-09-01
NUMBER OF SEQ ID NOS: 60
SOFTWARE: Microsoft Office 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Brzostowicz, Patricia C. APPLICANT: Cheng, Qiong
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Picataggio, Steve
APPLICANT: Rouviere, Pierre E.
TITLE OF INVENTION: CAROTEMOID PRODUCTION FROM A SINGLE CARBON SOURCE
FILE REFERENCE: CL1903 US NA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: PRT
ORGANISM: Methylomonas 16a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 hes 318;
                          301
                                                                   241
                                                                                                           241
                                                                                                                                                      181
                                                                                                                                                                                               181
                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                        4
                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                               1 MQIVLANPRGECAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
EEKVVFSIPKELKKHMQA 318
                                                                                                                                                    DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                              HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV 180
                                                                   GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                              GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAMGGETYSVRENSGI
                                                                                                                                                                                          DALREOFPSIKEOKKODICYATONRODAVHDLAKISDLILVVGSPNSSNSNRLREIAVOL 240
                                                                                                                                                                                                                                                                                                                      SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAXQGREVILIG 120
                                                                                                                                                                                                                                                                                                                                                 SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EEKVVPSIPKELKKHMQA 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DALREQFPSIKEQKKODICYATQNRQDAVHDLAKISDLILVVGSPNSSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVMNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVMNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                       HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                                       MQIVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EEKVVFSIPKELKKHMQA 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Miller, Edward S
Odom, J. Martin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Cheng, Qiong
DiCosimo, Deana J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Application US/09941947A
No. US20030003528A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Koffas, Mattheos
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.0%; Score 1623; DB 11; ilarity 100.0%; Pred. No. 2.5e-150; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Edward S. Jr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 318;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                   300
                                                                                                           300
                                                                                                                                                    240
                                                                                                                                                                                                                                     180
                                                                                                                                                                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Rabme, Laurence G.
APPLICANT: Rahme, Laurence G.
TITLE OF INVENTION: VIRULENCE-ASSOCIATED NUCLEIC ACID
TITLE OF INVENTION: SEQUENCES AND USES THEREOF
FILE REFERENCE: 00786/361003
CURRENT APPLICATION NUMBER: US/09/975,719
CURRENT FILING DATE: 2001-10-10
PRIOR APPLICATION NUMBER: US 99/199,637
PRIOR APPLICATION NUMBER: US 99/199,637
PRIOR APPLICATION NUMBER: US 60/066,517
PRIOR FILING DATE: 1998-11-25
PRIOR FILING DATE: 1997-11-25
VINDBER OF SEQ ID NOS: 437
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 429
LENGTH: 349
                                                                                                                                                                                                                                                                                                                      US-10-156-761-10747
                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
APPLICANT: ISHIXAWA, JUN
APPLICANT: HORIKAWA, HIROSHI
APPLICANT: SHEA, TADAYOSHI
APPLICANT: SAKAKI, YOSHIYUKI
APPLICANT: SAKAKI, YOSHIYUKI
APPLICANT: HATTORI, WASAHIRA
TITLE OF INVENITION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-262
FILE REFERENCE: 249-262
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: JP 2001-204089
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-975-719-429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-975-719-429
                                                                                                                                                                                                                                                       Sequence 10747, Application US/10156761 Publication No. US20030119018A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 429, Application No. US200 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches 198; Conservative
                                                                                                                                                                                                              APPLICANT: OMURA, SATOSHI APPLICANT: EKEDA, HARUO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: PRT ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 156
                                                                                                                                                                                                                                                                                                                                                                                                         333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121 HAGHPEVEGTMGQYBKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301 EEKVVFSIPKELKKHMQA 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               96 DQVPDNVIVIFSAHGVSQAVRKEAEGRGLKVFDATCPLVTKVHWEVVRYSRDGHECVLIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61 SDVPVGSYLIFSAHGVSKEVQQBABERQLTVFDATCPLVTKVHWQVAKHAKQGREVILIG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MQIVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                  EEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DÁLRAKFPQIQGPRKNDICYÁTÓNRÓDÁVKELÁDOCDMVLVVGSPNSSNSNRLRELAERM 274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HEGHPEVEGTMGQYD-ASNGGAIYLVEDEADVAALEVRKPEALHYVTQTTLSMDDTSKVI 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MQIKLANPRGFCAGVDRAIBIVNRALDVFGPPIYVRHEVVHNKFVVDNLRQRGAIFVEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EENITESMPKELR 345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Application US/09975719
o. US20030022349A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    63.4%; Score 1028.5; DB 11; Length 63.3%; Pred. No. 4.7e-92; tive 49; Mismatches 63; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ω
T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     95
```

Ŋ

В Ś 90 Š ğ Ş 밁 S

뭆

```
FILE REFERENCE: 249-125
CURRENT APPLICATION NUMBER: US/09/738,626
CURRENT FILING DATE: 2000-12-18
PRIOR APPLICATION NUMBER: JP 99/377484
PRIOR APPLICATION NUMBER: JP 09/377484
PRIOR FILING DATE: 1999-12-16
PRIOR FILING DATE: 2000-04-07
PRIOR FILING DATE: 2000-04-07
PRIOR APPLICATION NUMBER: JP 00/280988
PRIOR APPLICATION NUMBER: JP 00/280988
PRIOR FILING DATE: 2000-08-03
NUMBER OF SEQ ID NOS: 7059
SOFTWARE: PATENTIN VEY: 3.0
SEQ ID NO 4643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-738-626-4643
                                         US-09-738-626-4643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; TYPE: PRT ; ORGANISM: Streptomyces avermitilis US-10-156-761-10747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 4643, Application US/09738626 Publication No. US20020197605A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR FILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 10747
LENGTH: 338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT:
APPLICANT:
APPLICANT:
  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches 153; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                 LENGTH: 325
TYPE: PRT
ORGANISM: Corynebacterium glutamicum
                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: NAKAGAWA, SATOSHI
                                                                                                                                                                                                                                                                                                                                                                 ITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          131 EGHEEVIGTSGEAPE----HITLYDGPGDVAKVEVRDPSKVVWLSQTTLSVDETMETVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62 DVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGH 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2 QIVLANPRGFCAGVDRAIEIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBELS 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         h 48.5%; Score 787; DB 1 Similarity 48.1%; Pred. No. 2e-68; 53; Conservative 71; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EVPEGAIVMFSÄHGVAPVVHEBAARGKLATIDATCPLVTKVHKBAVRFANEDFDILLIGH
                                                                                                                                                                                                                                                                                                                                                                                           IKEDA,
OZAKI,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BESITFSLPKELRRDLRA 321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BEKVVFSIPKELKKHMQA 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ARDAYLVDFADEIDEAWLEGVSTVGVTSGASVPEILVEQVLEWLSQRGFEDVEIVK--AA 303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -KPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ALKEKFPOLISPPSDDICYATONROLAVKOMGEEADLVIVVGSRNSSNSVRLVEVAKLAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ALREQPPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLG 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDFKVMVD 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RVLLAAPRGYCAGVDRAVIAVEKALBOYGAPIYVRHEIVHNKYVVQTLERKGAIFVERTA 70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MIZOGUCHI, I
                                                                                                                                                                                                                                                                                                                                                                                                                              YOKOI, HARUHIKO
TATEISHI, NAOKO
SENOH, AKIHIRO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OCHIAI,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HAYASHI, MIKIRO
                                                                                                                                                                                                                                                                                                                                                                                       , MASATO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KEIKO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HIROSHI
  46.58;
Score 755;
멂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 15;
10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           86; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 338;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          130
```

```
Ş
                                                                                                                                              ; NUMBER OF SEQ ID NOS: 292
; SOFTWARE: FastSEQ for Windows Version
; SEQ ID NO 271
; LENGTH: 329
; TYPE: PRT
; ORGANISM: Mycobacterium tuberculosis
US-09-712-363-271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 6
US-09-712-363-271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CURRENT APPLICATION NUMBER: US/09/712,363
CURRENT FILING DATE: 2000-11-13
PRIOR APPLICATION NUMBER: PCT/US00/02246
PRIOR TILING DATE: 2000-01-28
PRIOR PPLICATION NUMBER: 60/179,531
PRIOR PILING DATE: 2000-02-01
PRIOR APPLICATION NUMBER: 60/117,844
PRIOR FILING DATE: 1999-01-29
PRIOR APPLICATION NUMBER: 60/118,206,
PRIOR PILING DATE: 1999-02-01
PRIOR PILING DATE: 1999-02-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                  Query Match
Best Local (
                                                                Matches 150;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 271, Application US/09712363 Patent No. US200201645BBA1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Rotstein, Sergio H.
APPLICANT: Marcotte, Edward M.
TITLE OF INVENTION: DETERMINING THE FUNCTIONS AND
TITLE OF INVENTION: INTERACTIONS OF PROTEINS BY COMPARATIVE ANALYSIS FILE REFERENCE: 07419-032001
CURRENT APPLICATION NUMBERS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity 48.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR
PRIOR
                                                                                                                                                                                                                                                                                              PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                  PRIOR FILING DATE: 1999-11-12
PRIOR APPLICATION NUMBER: 60/165,086
                                                                                                                                                                                                                                                                                                                                                                              PRIOR APPLICATION NUMBER: 60/134,092
PRIOR FILING DATE: 1999-05-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Eisenberg, David APPLICANT: Rotstein, Sergi
                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: 60/165,124
                                                                                    Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: 60/126,593 FILING DATE: 1999-03-26
                                                                                                                                                                                                                                                                                                                                                                                                                          FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   308 SAAEKIVFALPRVLR 322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            152; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        75 EAPEGAMMVFSAHGVSPMVHEEAAAKNIKAIDAACPLVTKVHKEVQRFDKQGFHILFIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           62 DVPVGSYLIFSAHGVSKEVQQEAEBRQLTVPDATCPLVTKVHMQVAKHAKQGREVILIGH 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15 KILLAAPRGYCAGVDRAVETVERALEEYGAPIYVRKEIVHNRYVVDTLAEKGAIFVNEAS
2 QIVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHBVVHNRTVVDGLKQKGAVFIEBLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GIEEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NGADNAYLVDYARBIDPAWFEGVETIGISSGASVPBILVQGVIBRLAEFGYD--DVEEVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LGKP-AYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENS 298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VDALREQFPSIKEQKKODICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQ 239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BGHEEVEGTMGHSVEKT-----HLVDGVAGIATLPEFLNDEPNLIWLSQTTLSVDETMEI 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGHPEVEGIMGQYEKCTEGGGIYLVETPEDVRNLK--VNNPNDLAYVTQTTLSMTDTKVM 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VRELKVKFPQLQDPPSDDICYATQNRQVAVKAIAERCELMIVVGSRNSSNSVRLVEVAKQ 249
                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                          1999-05-14
                                                                                                                                                                                                                                                                                              1999-11-12
                                                              45.8%; Score 743.5;
47.6%; Pred. No. 3.4e
tive 60; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                            60/134,093
                                                           60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        67;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No. 2.5e-65; 7: Mismatches 86;
                                                                                    .4e-64;
                                                                                                      DB 10;
                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                      Length
                                                                                                        329;
                                                              11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10;
                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                        62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          74
```

Ś

S

유

```
밁
                                 5
                                                                             ď
                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 7
US-09-712-363-188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: 60/179,531
PRIOR FILING DATE: 2000-02-01
PRIOR APPLICATION NUMBER: 60/117,844
PRIOR FILING DATE: 1999-01-29
PRIOR APPLICATION NUMBER: 60/118,206,
PRIOR HILING DATE: 1999-02-01
PRIOR APPLICATION NUMBER: 60/126,593
PRIOR PILING DATE: 1999-03-26
PRIOR APPLICATION NUMBER: 60/134,093
PRIOR FILING DATE: 1999-05-14
PRIOR APPLICATION NUMBER: 60/134,093
PRIOR APPLICATION NUMBER: 60/134,093
PRIOR FILING DATE: 1999-05-14
PRIOR APPLICATION NUMBER: 60/165,124
PRIOR APPLICATION NUMBER: 60/165,124
PRIOR FILING DATE: 1999-11-12
PRIOR APPLICATION NUMBER: 60/165,086
PRIOR APPLICATION NUMBER: 60/165,086
PRIOR FILING DATE: 1999-11-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   á
                                                                                                                                                                                                                                                                                                                                   SOFTWARE: Fa
                                                                                                                                                                  Matches
                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 188, Application US/09712363
Patent No. US20020164588A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                  TYPE: PRT ORGANISM: Mycobacterium tuberculosis -09-712-363-188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILE REFERENCE: 07419-032001
CURRENT APPLICATION NUMBER: US/09/712,363
CURRENT FILING DATE: 2000-11-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Eisenberg, David
APPLICANT: Rotstein, Sergio H.
APPLICANT: Marcotte, Edward M.
TITLE OF INVENTION: DETERMINING THE FUNCTIONS
TITLE OF INVENTION: INTERACTIONS OF PROTEINS
                                                                                                                                                                                                                                                                                                                                                                               NUMBER OF SEQ ID NOS: 292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR APPLICATION NUMBER: PCT/US00/02246
PRIOR FILING DATE: 2000-01-28
                                                                                                                                                                                                                                                                                                              LENGTH:
                                                                                                                                                                  Socal Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     119
                                                                                  27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        63
                                                                                                                                                                                                                                                                                                                 335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  20
                                                                                                                          N
                                                                                                                                                                                                                                                                                                                                                         FastSEQ for Windows Version
                                 DVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGH 121
                                                                                                        QIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVPIBELS
QVPEGAIVVFSAHGVAPTVHVSASERNLQVIDATCPLVTKVHNEARRFARDDYDILLIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      V----PVGSYLIFSAHGVSKEVQQBABERQLTVFDATCPLVTKVHMQVAKHAKQGREVIL 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IATETVRFGLPKQVR 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GIEEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VIDALRARFFILGQPPSEDICYATTNRQRALQSMVGECDVVLVIGSCNSSNSRRLVBLAQ 254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VLLASPRSPCAGVERAIETVKRVLDVAEGPVYVRKQIVHNTVVVAELRDRGAVFVBDLDB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RSGTPAYLIDGPDDIEPEWLSSVSTIGVTAGASAPPRLVGQVIDALRGYASIT -- VVERS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MYDALREQFPSIKEOKKODICYATONRODAVHDLAKISDLILYVGSPNSSNSNRLREIAV 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKV 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IPDPPPPGAVVVFSAHGVSPAVRAGADERGLQVVDATCPLVAKVHAEAARFAARGDTVVF 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IGHAGHEETEGTLGVAPRST-----LLVQTPADVAALNLPEGTQLSYLTQTTLALDETAD
                                                                                                                                                                  Conservative
                                                                                                                                                                                  47.0%;
                                                                                                                                                                66;
                                                                                                                                                                Score 733; DB 10;
Pred. No. 3.8e-63;
6; Mismatches 92;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPARATIVE
                                                                                                                                                                                                        Length 335;
                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ANALYSIS
                                                                                                                                                                œ
                                                                                                                                                              Gaps
                                                                                98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            79
```

•

밁 S

Application US/10022832

Ş 밁

밁

á 끟 Ś 맑 Ş

ð

```
RESULT 9
US-10-022-832-36
J Sequence 36, Application US/10022
Publication No. US20030059896A1
J GENERAL INFORMATION:
APPLICANT: COUTURE, FRANCE
J APPLICANT: HAMEL, JOSEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQ ID NOS: 6
SEQ ID NO 1090
LENGTH: 310
TYPE: PRT
ORGANISM: Chlamydia pr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-289-762-1090
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-289-762-1090
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 1090, Application US/10289762 Publication No. US20040006218A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE OF INVENTION: Chlamydia pneumoniae genomic sequence and polypeptides, fractitle OF INVENTION: thereof and uses thereof, in particular for the diagnosis, TITLE OF INVENTION: and treatment of infection FILE REFERENCE: 9710-003-999
CURRENT APPLICATION NUMBER: US/10/289,762
CURRENT FILING DATE: 2003-03-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Griffais,
                                                                                                                                                                                                                                                                                                                                                               178
                                                                                                                                                                                              291
                                                                                                                                                                                                                                                                                                                     242 KPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                  123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122 AGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           143;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62 DVPVGSYLIFSAHGVSKEVQQEABERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3 KLILCNPRGFCSGVVRÄIQVVEVÄLEKWGAPIYVKHEIVHNRHVVNALRAKGAIFVEELV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                            NDIFAVEDVVFQLPKELR
                                                                                                                                                                                                                                                                                                                                                                                                                                                  KKHVEVIGIVGEVPB-----HITVVEKVADVEALPFSSDTPLFYITQTTLSLDDVQEISS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DVPEGERVIYSAHGIPPSVRAEAKARKLIDIDATCGLVTKVHSAAKLYASKGYKIILIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -KPAYLIDTYQDLXQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                            VPADLINNPEDIDTNIVNHSGDIAMTAGASTPEDVVQACIRKL-----SSLIPGLQVE
                                                                                                                                                                                                                                                                                                                                                               ALLKRYPSIITLPSSSICYATTNRQKALRSVLSRVNYVYVVGDVNSSNSNRLREVALRRG
                                                                                                                                                                                                                                                                                                                                                                                                   ALREQFPSIKEQKKODICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EGHEEVVGTAGE----APDHYQLVDGVDAVDQVTVRDEDXVVWLSQTTLSVDETWEIVG
                                                                                                                                                                                                                                  ----EKVVESIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NETLVFALPRELR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ARAAHLVDWADDIDSAWLDGVTTVGVTSGASVPEVLVRGVLERLAECGYDI--VQPVTTA 319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RLRRRFPKLQDPPSDDICYATQNRQVAVKAMAPECELVIVVGSRNSSNSVRLVEVALGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ALREQFPSIKEQKKODICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           40.9%; Score 663; DB 12; 45.0%; Pred. No. 2.4e-56;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 310;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         18;
                                                                                                                                                                                                                                                                                                                                                             237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                  177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     fragments
sis, preve
```

DNA

```
δ
                                                                                                                          US-10-275-360-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-275-360-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-022-832-36
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 5, Application US/10275360 Publication No. US20030115634A1 GENERAL INFORMATION:
                                         Matches
                                                                                Query Match
                                                                                                                                                                                                      SEQ ID NO 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches 143; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: BRODEUR, BERNARD R.
APPLICANT: MARTIN, DENIS
TITLE OF INVENTION: NOVEL CHLAMYDIA ANTIGENS AND CORRESPONDING
TITLE OF INVENTION: FRAGMENTS
FILE REFERENCE: BIOVAC-15
CURRENT APPLICATION NUMBER: US/10/022,832
CURRENT FILING DATE: 2001-12-20
PRIOR FILING DATE: 2001-12-20
PRIOR APPLICATION UMBER: 60/556,941
PRIOR PETING DATE: 2000-12-21
RUMBER OF SEQ ID NOS: 77
                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/10/275,360
CURRENT FILLING DATE: 2002-11-05
PRIOR APPLICATION NUMBER: PCT/EP01/04537
PRIOR FILING DATE: 2001-04-21
PRIOR APPLICATION NUMBER: DE10021688.9
PRIOR FILING DATE: 2000-05-05
NUMBER OF SEQ ID NOS: 28
                                                                                                                                                                                                                          SOFTWARE: PatentIn version 3.1
                                                                                                                                                                                                                                                                                                                                                                                         TITLE OF INVENTION: GENES OF THE 1-DESOXY-D-XYLULOSE BIOSYNTHESIS PATH FILE REFERENCE: JOMAA-12 (PCT)
                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: JOMAA, Hassan
                                                                                                                                         LENGTH: 539
TYPE: PRT
ORGANISM: Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: PRT
ORGANISM: Chlamydia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ENGTH: 310
                                                               Local
                                         123;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 123 KKHVEVIGIVGEVPB-----HITVVBKVADVEALPFSSDTPLFYITQTTLSLDDVQEISS 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        122 AGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNIKVNNPNDLAYVTQTTISMTDTKVMVD 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62 DVPVGSYLIFSAHGVSKEVQQBAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGH 121
3 IVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEELSD 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2 QIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBELS
                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGIE 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KLIICNPRGFCSGVVRAIQVVEVALEKWGAPIYVKHEIVHNRHVVNALRAKGAIFVBELV 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NDIFAVEDVVPQLPKELR 308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VPADLINNPEDIDTNIVNHSGDIAMTAGASTPEDVVQACIRKL-----SSLIPGLQVE 290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ALLKRYPSIITLPSSSICYATTNROKALRSVLSRVNYVYVVGDVNSSNSNRLREVALRRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ALREQFPSIKEQKKDDICYATONRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLG 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -----EKVVFSIPKELK 313
                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          pneumoniae
                                                                                                                                       falciparum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   40.9%; Score 663; DB 15;
45.0%; Pred. No. 2.4e-56;
ative 59; Mismatches 98
                                                          36.9%;
                                       55.
                                                      Score 598.5; DB 1
Pred. No. 1.2e-49;
                                       Mismatches
                                                                            DB 15;
                                       99;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 310;
                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                            Length
                                     ບາ
--
                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
```

```
Ś
Ş
                                           밁
                                                                                  δ
                                                                                                                               문
                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; ORGANISM: Streptomyces avermitilis US-10-156-761-10047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 11
US-10-156-761-10047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           皮
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR PILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 10047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 10047, Application US/10156761 Publication No. US20030119018A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: ISHIKAWA, JUN
APPLICANT: HORIKAWA, HIROSHI
APPLICANT: SHIBA, TADAYOSHI
APPLICANT: SAKAKI, YOSHIYUKI
APPLICANT: HATTORI, MASAHIRA
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: OMURA, SATOSHI
APPLICANT: IKEDA, HARUO
APPLICANT: ISHIKAWA, JUN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH:
                                                                                    195
                                                                                                                               760
                                                                                                                                                                           173 MTDTKVMVD-----
                                                                                                                                                                                                                    710
                                                                                                                                                                                                                                                                                                        679
250 YQDLKQDWLEGIEVVGVTAGASAPEVLVQ 278
                                                                                                                                                                                                                                                                                                                                                                                          632 IITNPKRAABALQWVVREMDLRYDDLAAFG----YRHIDDFNEAIRNG-KVK------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               346 NHVEVIGTYNEAPHCT----HIVENVNDVDKLNFPLNKKLFYVTQTTLSMDDCALIVQK 400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        123 GHPEVEGIMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMVDA 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    226 LYLINPRGFCKGVSRAIETVEECLKLFKPPIYVKHKIVHNDIVCKKLEKEGAIFIEDLND 285
                                                                                                                                                                                                                                                                                                                                             61 SDVPVGSYLIFSAHGVSKEVQQEABERQLTVFDATCPLVTKVH--MQVAKHAKQGREVIL 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            £83
                                                                                                                                                                                                                                                                                                                                                                                                                                 4 VLANPRGFCAGVDRAIBIVD----QAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBEL
                                           RDDVTVGTKQKKBIDEDIGDDLDLLCQAAELVVSTQFGSTSMLQRKLRVGFAKAGRLMDL
                                                                                  KDDICYATQNRQDAVHDLAKISDLI-----LVVGSPNSSNSNRLREIAVQLGKPAYLIDT
                                                                                                                               LADSRVILDQPGAEKLIGKGDGLFLPMGANKPTRMQGAFVTEDEVEAVVQHCKDQMAPVF
                                                                                                                                                                                                                                                        IGHAGHPEVEGTMGQYEKCTEGGGIYLV---ETPE-DVRN--LKVNNPNDLAYVTQTTLS 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VPVGSYLIFSAHGVSKEVQQEABERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGHA 122
                                                                                                                                                                                                                 ----DVBDAIVRITQLARAAGIHLVLATQRPSVDVVTGLIKANVPSRLAFATS---S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PAVLLNTVHDLDQQILKNVNKIALTSAASTPEQETQKFVNLL 502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LKNKFPHIETIPSGSICYATTNRQTALNKICTKCDLTIVVGSSSSSNAKKLVYSSQIRNV 460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VPDGHILIYSAHGISPQIREIAKKKKLIEIDATCPLVNKVHVYVQMKAKENYDIILIGYK 345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PAYLIDTYQDUKQDWLEGIEVVGVTAGASAPEVLVQEVIDQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LREQPPSIKBQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLGK 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 6.8%;
20.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            50; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 111; DB 15; Length 917; Pred. No. 0.14;
                                                                                                                                                                                                                                                                                                      ERELSPYPYLLVIVDELADLMMVAPR-----
                                                                                                                                                                        -ALREQFPSIKEQK-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            97;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels 114;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             819
                                                                                                                                                                                                                 759
                                                                                                                                                                                                                                                                                                                                                                                                                                 60
                                                                                                                                                                        194
                                                                                                                                                                                                                                                                                                    709
```

밁

980

-MESRNIVGPSEGSKARDVLVK 900

```
밁
                                                                                                        Š
                                                                                                                                             밁
                                                                                                                                                                              δ
                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                용
                                                                                                                                                                                                                                                                                                                                á
                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                              맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-712-363-282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-712-363-282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS:
SOFTWARE: FastSEQ for
SEQ ID NO 282
LENGTH: 578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 20 Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR FILING DATE: 1999-11-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR
PRIOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/09/712,363
CURRENT FILING DATE: 2000-11-13
PRIOR APPLICATION NUMBER: PCT/US00/02246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: ROTSTEIN, SETGIO H.
APPLICANT: MARCOLTE, EdWARD M.
TITLE OF INVENTION: INTERACTIONS OF PROTEINS
TITLE OF INVENTION: INTERACTIONS OF PROTEINS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR APPLICATION NUMBER: 60/126,593
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Eisenberg, David
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM: Mycobacterium tuberculosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR FILING DATE: 1999-02-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Match 6.7%;
Local Similarity 20.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE: 07419-032001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: 60/134,093
FILMS DATE: 1999-05-14
APPLICATION NUMBER: 60/134,092
FILING DATE: 1999-05-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: 60/118,206,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: 60/165,086
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILING DATE: 1999-11-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: 60/165,124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICATION NUMBER: 60/117,844
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE: 2000-02-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: 60/179,531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILING DATE: 2000-01-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         282,
US200
                                                                                                              231
                                                                                                                                                 255
                                                                                                                                                                                    189
                                                                                                                                                                                                                          206
                                                                                                                                                                                                                                                             136
                                                                                                                                                                                                                                                                                                156
                                                                                                                                                                                                                                                                                                                                                                       122 -----
                                                                                                                                                                                                                                                                                                                                    95
                                                                                                                                                                                                                                                                                                                                                                                                                                                67
                                                                                                                                                                                                                                                                                                                                                                                                         42 NRTVVDGLKQKGAVFIEELSDVPVGSYLIFSAHGVSK-----EVQQEAEERQLTVFDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6 ANPRGFC-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       78;
                                     GGETTSVRENSGIEEKVVFSIP 309
                                                                                                            NRLREIAVQLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQL---KAW 287
                                                                                                                                                                                  SIKEQKKDDICYATQNRQDAVHD-----LAKISDLILVVGSPNSSNS-----
                                                                                                                                                                                                                      - IRAGGG----SPRDTLSVLDQLLAGAAD-THVTYTRALGLLGVTDVALIDDAV----D 254
                                                                                                                                                                                                                                                         KCTEGGGIYLVETPED---VRNLKVNNPNDLAYVTQT----TLSMTDTKVMVDALREQFP 188
                                                                                                                                                                                                                                                                                              TEPEKVLPTIRSRTHHYPFRLLPPRTMRALLARICEQ--EGVVVDDAVYPLV------ 205
                                                                                                                                                                                                                                                                                                                                      TCP----
                                                                                                                                                                                                                                                                                                                                                                                                                                              ANPCGVCESCVSLAPNAPGSIDVVELDAASHGGVDDTRELRDR---AFYAPVQSRYRV-- 121
DAESALLQRVERIETRLDMSIP
                                                                        DRMREQAARIGRAT -- LTRYABVVQAGL --
                                                                                                                                               ALAACDAAALFGAIESVIDGGHDPRRFATDLLERFRDLIVLQSVPDAASRGVVDAPEDAL 314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Application US/09712363
20020164588A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        for Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1999-03-26
                                                                                                                                                                                                                                                                                                                                      LVTKVH--
                                                                                                                                                                                                                                                                                                                                                                       -----FIVDEAHMVTTAGFNALLKIVEEPPEHLIFIFAT 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pred. No. 0.11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 109;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches 105;
 388
                                                                                                                                                                                                                                                                                                                                  --MOVAKHAKOGREVILIGHAGHPEVEGTMGQYE 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----AGVDRAIEIVDQAIEAFGAPIYVRHEVVH 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 10;
                                                                          -GEMRGATÁPRILLEVVCARLLLPSÁS 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AND
BY COMPARATIVE ANALYSIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 578;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels 138;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                  230
                                                                                                                                                                                                                                                                                                                                                                                                           94
```

```
APPLICANT: Cao, Yongwei
APPLICANT: Hinkle, Gregory J.
APPLICANT: Hinkle, Gregory J.
APPLICANT: Slatter, Steven C.
APPLICANT: Goldman, Barry S.
APPLICANT: Goldman, Barry S.
APPLICANT: Chen, Xianfeng
TITLE OF INVENTION: EXPRESSION OF MICROSIAL PROTEINS IN TITLE OF INVENTION: PLANTS WITH IMPROVED PROPERTIES FILE REFERENCE: 38-10(52052)B
CURRENT APPLICATION NUMBER: US/10/369,493
CURRENT FILING DATE: 2003-02-28
PRIOR APPLICATION NUMBER: US 60/360,039
PRIOR PILING DATE: 2002-02-21
PRIOR FILING DATE: 2002-02-21
                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 14
US-10-369-493-1052
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; ORGANISM: Caenorhabditis elegans US-10-369-493-5415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 13
US-10-369-493-5415
                                                                                                                                                                                                                                                                                                                                             GENERAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQ ID NOS: 47374
SEQ ID NO 5415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
APPLICANT: Cao, Yongwei
APPLICANT: Hinkle, Gregory J
APPLICANT: Slater, Steven C.
APPLICANT: Goldman, Barry S.
APPLICANT: Chen, Xianfeng
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 5415, Application US/10369493 Publication No. US20030233675A1
                                                                                                                                                                                                                                                                                                                                                                    Sequence 1052, Application US/10369493 Publication No. US20030233675A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Chen, Xianfeng
TITLE OF INVENTION: EXPRESSION OF MICROBIAL PROTEINS IN PLANTS FOR PRODUCTION
TITLE OF INVENTION: PLANTS WITH IMPROVED PROPERTIES
FILE REFERENCE: 38-10(52052)B
FILE REFERENCE: 38-10(52052)B
FILE REFERENCE: 38-10(52052)B
FILE REFERENCE: 38-10(52052)B
FILE REFERENCE: 38-10(52052)B
FILE REFERENCE: 38-10(52052)B
FILE REFERENCE: 38-10(52052)B
CURRENT APPLICATION NUMBER: US/360,039
PRIOR APPLICATION NUMBER: US/60/360,039
PRIOR FILING DATE: 2002-02-21
NUMBER OF SEQ ID NOS: 47374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ENGTH: 925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local
                                                                                                                                                                                                                                                                                                                                           INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 175 DTKVMVDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLR 234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           197 DGTAAAL---SHGIFRRKEIGEKPQRLMVYDMGAAKTTATIVEFKLVKEKYBKQPKMTVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                143 MILANAKKFTEEYAQAABIKDVVIT---VPVYF---TPABKLAVERAAQMAGLTVLQLIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           304 RLKQVLSANAEHFAQIESAHEDIDAKLKVTREDFNH---LISDMESRFGEP-IEQALRMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   254 GVG-----FDRTLGGIE-MINRLRDHLIEMFE--KNYKPKTKVNINRRA-MIKFSKEAE 303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   119 -IGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVN---NPNDLAYVTQTTLSMT 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        63 VPVGSYLIFSAHGVSKEVQQEAEERQLTVFD----ATCPLVTKVHMQVAKHAKQGREVIL 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3 IVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEELSD 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DQLKAWGGETTSVRENSG-----IEEKVVPSI 308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EIAVQLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEV--LVQEVI----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DEAVAMGALFQAAHLSKGFKVKPFNIEEKVIFPV 434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6.7%; Score 109; DB 12; 23.1%; Pred. No. 0.23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         --DDIDQFVLMG-----AGTRVPKVQEIVQKTIGTKEIGKFLNT 400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        53; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        134;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 925;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                      IN PLANTS FOR PRODUCTION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           17
                                                                                                                                                                                      Ş
```

```
B
                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                     á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-369-493-19263
; Sequence 19263, Application US/10369493
; Publication No. US20030233675A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; TYPE: PRT ; ORGANISM: Myxococcus xanthus US-10-369-493-19263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; SEQ ID NO 1052
; LENGTH: 501
; TYPE: PRT
; ORGANISM: Methanococcus jannaschii
US-10-369-493-1052
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION NUMBER: US/10/369,493
CURRENT FILING DATE: 2003-02-28
PRIOR APPLICATION NUMBER: US 60/360,039
PRIOR FILING DATE: 2002-02-21
NUMBER OF SEQ ID NOS: 47374
SEQ ID NO 19263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 6.4%; Score 104.5; DB 12; Length 501; Best Local Similarity 20.5%; Pred. No. 0.24; Matches 69; Conservative 51; Mismatches 134; Indels 83;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Slater, Steven C.
APPLICANT: Goldman, Barry S.
APPLICANT: Goldman, Barry S.
APPLICANT: Chen, Xiaufeng
TITLE OF INVENTION: EXPRESSION OF MICROBIAL PROTEINS IN PLANTS FOR PRODUCTION OF
TITLE OF INVENTION: PLANTS WITH IMPROVED PROPERTIES
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38-10 [52052] B.
FILE REFERENCE: 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Cao, Yongwei
APPLICANT: Hinkle, Gregory J.
APPLICANT: Slater, Steven C.
APPLICANT: Goldman, Barry S.
APPLICANT: Chen, Xianfeng
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ENGTH: 1130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local Similarity
105 QVAKHAKQGREVILIGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVR------ 153
                                                                                                                                    664 NNLTDQVRNIAEVTTAVAKGDLSRKITVDAKGEVLELKSTINTMVDQLNSFAAEVTRVAK 723
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       356 LYRSP----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   385 IAKLITYGNSREBAIARMKRALREYVIIGVKTNIPFH 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        281 IDOLKAWGG--ETTSVRENSGIEEKVVFSIPKELKKH 315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   221 VVGSPNSSNSNRLREIAVQLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEV 280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  298 -- VTEQVTGIDLVKAMIKIAAGEELTLKQEDVKIRGHAIECRINAEDPLNDFVPCPGKIK 355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              164 AYVTQTTLSMTDTKVMVDALREQFPSIKEQKKDDICYATQ---NRQDAVHDLAKISDLIL 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  104 MOVAKHAKOGREVILIGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDL 163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        193 GDPTVFIEKYLENPRHIEIQLLGDKHGNIIHLGDRECSIQRRHQKL-IEEAPSPIMTE-- 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   51 QKGAVFIEELSDVP--VGSYLIFSAHG----VSKEVQQEAEERQLTVFDATCPLVTKVH 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  14 GVDRAIEIVDQAI---EAFGAPIYVR------HEVVHN-RTVVDGLK 50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         70;
                                                                                                                                                                                                                               HGVSKEVQQEAE------ERQLTV-----
                                                                                                                                                                                                                                                                                                                    EVAELADTINAMTQTLS1FAQQVTDVARTVGVEGKLGAQAVVPGVAGTWKDLTNNVNLLA 663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ---ELRBRMGEAAIKAGKAINYDSAGTV---BFLYENGNFYFLB-----MNTRIQVEHT- 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6.4%; Score 104.5; DB 12; Length 1130;
16.9%; Pred. No. 0.86;
ative 64; Mismatches 124; Indels 155; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -GGPGVRIDS----
                                                                                                                                                                                                                               ----FDATCPLVTKVHM 104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GVYGGAEIPP-YYDSM 384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               13;
```

724 EVGTEGKLGGQAEVRGVSGVWKDLTDNVNFWAVNLFTQVRGIVRVVTAVAN 774 154NLKVNNPDLAYVTQTTLSWTDT

Search completed: January 29, 2004, 16:21:19 Job time: 22.7073 secs

GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.

OM protein - protein search, using sw model

Run on: January 29, 2004, 15:44:49; Search time 9.35661 Seconds (without alignments)

Title: US-09-941-947A-18
Perfect score: 1623
Sequence: 1623
Sequence: 1 MQIVLANPRGFCAGVDRAIE.......GIEEKVVFSIPKELKKHMQA 318
Scoring table: BLOSUM62
Gapop 10.0, Gapext 0.5

Searched: 283308 seqs, 96168682 residues

Total number of hits satisfying chosen parameters: 283308

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database: PIR 76:*
1: pir1:*
2: pir3:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

片

298 EENITFSMPKELR 310

RESULT 2

45	44	43	42	41	40	39	38	37	36	Ω ω	34	33	32	31	30
108.5	109	109	109	109	110	111.5	112.5	115	230	288	312	332	335.5	341	358
6.7	6.7	6.7	6.7	6.7	6.8	6.9	6.9	7.1	14.2	17.7	19.2	20.5	20.7	21.0	22.1
544	925	578	522	499	500	777	434	929	452	376	402	275	274	406	642
N	N	N	N	N	N	} 0	N	N	N	N	N	N	<u>سر</u>	N	2
B41479	G88175	B70796	A33644	AI1472	AB1111	G69773	B72228	T35683	T04781	G71310	AF1929	A72253	H64569	876307	H97127
60K heat shock pro	protein T24H7.2 [i	probable DNA POLYM	signal recognition	heat-shock protein	heat-shock protein	conserved hypothet	pyrimidine-nucleos	ftsK homolog - Str	hypothetical prote	probable penicilli	hypothetical prote	lytB protein - The	lysis tolerance pr	hypothetical prote	fusion Penicillin

ALIGNMENTS

Qy 241 GKPAYLIDTYQDIKQDMLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI	241	180	,	QY 181 DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL	Db 121 HEGHPEVEGTMGQYD-ASNGGAIYLVEDEADVAALEVRKPEALHYVTQTTLSMDDTSKVI	Qy 121 HAGHPEVEGTMGQYSKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV	Db 61 DQVPNNVIVITSAHGVSQAVRKKABGRGLKVFDATCPLVTKVHMBVVRYSRDGHECVLIG	Qy 61 SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG	Db 1 MQIKLANPRGFCAGVDRAIEIVNRALDVEGPPIYVRHEVVHNKFVVDNLRQRGAIFVEEL	Qy 1 MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL	Query Match 63.4%; Score 1028.5; DB Best Local Similarity 63.3%; Pred. No. 6.8e-67; Matches 198; Conservative 49; Mismatches 63	A;Gene: lyt8; PA4557 C;Superfamily: penicillin tolerance protein	A:Experimental source: strain PAO1 C:Genetics:	A;Status: preliminary A:Molecule type: nux	A;Reference number: A82950; MUID:20437337; PMID:10984043 A;Accession: G83076	A;Title: Complete genome sequence of Pseudomonas aeruginosa	.; Lory, S.; Olson, M.V. Nature 406, 959-964, 2000	adman, S.; Yuan, Y.; Brody, L.L.; Coulter, S.N.; Folger, K.R.; Kas,	C;Accession: G83076	C;Date: 15-Sep-2000 #sequence_revision 15-Sep-2000 #text change	LytB protein PA4557 [imported] - Pseudomonas aeruginosa	G83076	
VRKEPALHYVTQTTISMDTTSKVI 179 DLILLVVGSPNSSNSNRLRELAVQL 240 :- - - - - -						VNNPUDLAYVTQTTLSMTDTKVMV 180	PLVTKVHMEVVRYSRDGHECVLIG 120	PLVTKVHMQVAKHAKQGREVILIG 120	HEVVHNKFVVDNLRQRGAIFVEEL 60	HEVVHNRTVVDGLKQKGAVFIEEL 60	DB 2; Length 314; 67; 63; Indels 3; Gaps 2;		NID: 33350/33; FIDN: AAGU/345.I; GSFDB: GNOO			eruginosa PA01, an opportunistic path		olger, K.R.; Kas, A.; Larbig, K.; Lim	now of the state o	#text_change 31-Dec~2000	inosa (strain PAO1)		

```
, S., Moule, S., O'Gaora, P.
Nature 413, 848-852, 2001
Nature 413, 848-852, 2001
A;Authors: Parry, C.; Quail, M.; Rutherford, K.; Simmonds, M.; Skelton, J.; Stevens, K.;
A;Title: Complete genome sequence of a multiple drug resistant Salmonella enterica serov
A;Reference number: AB0502; MUID:21534947; PMID:11677608
A;Accession: AD0508
                                                                                                                                                                                                                                                                                                                                                                                                                                   LytB protein [imported] - Salmonella enterica subsp. enterica serovar Typhi (strain CT18 C;Species: Salmonella enterica subsp. enterica serovar Typhi A;Note: this species has also been called Salmonella typhi C;Date: 09-Nov-2001 #sequence_revision 09-Nov-2001 #text_change 18-Nov-2002 C;Accession: ADD508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 멼
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ఠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Gene: 19th C;Superfamily: penicillin tolerance protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               R;Parkhill, J.; Wren, B.W.; Thomson, N.R.; Titball, R.W.; Holden, M.T.G.; Prentice, M.B. deno-Tarrage, A.M.; Chillingworth, T.; Cronin, A.; Davies, R.M.; Davis, P.; Dougan, G.; il, M.; Rutherford, K.; Simmonds, M.; Skelton, J.; Stevens, K.; Whitehead, S.; Barrell, Nature 413, 523-527, 2001

Nature 413, 523-527, 2001

Nittle: Genome sequence of Yersinia pestis, the causative agent of plague.

A;Reference number: AB0001; MUID:21470413; PMID:11586360

A;Accession: AC0059
                                                  A;Gene: STY0058
C;Superfamily:
                                                                                                       C; Genetics:
                                                                                                                                                    A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-316 <PAR>
                                                                                                                                                                                                                                                                                                                                                       R;Parkhill, J.; Dougan, G.; James, K.D.; Thomson, N.R.; Pickard, D.; Wain, J.; Churcher, th, T.; Connerton, P.; Cronin, A.; Davis, P.; Davies, R.M.; Dowd, L.; White, N.; Farrar, S.; Moule, S.; O'Gaora, P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C;Species: Yersinia pestis
C;Date: 02-Nov-2001 #sequence_revision 02-Nov-2001 #text_change 09-Nov-2001
C;Accession: AC0059
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8050GA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: GB:AL590842; PIDN;CAC89334.1; PID:g15978571; GSPDB:GN00175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Molecule type: DNA
A; Residues: 1-317 < KUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches 200;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Genetics:
                                                                                                                                Cross-references: GB:AL513382; PIDN:CAD01204.1; PID:g16501333; GSPDB:GN00176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein [imported]
                                                                                 STY0058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            240 LGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWG-GETTSVRENS 298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            بر
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MQIVLANPRGFCAGVDRAISIVDQAISAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       h 62.8%; Score 1019.5; DB 2; Length 317; Similarity 63.5%; Pred. No. 3.1e-66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GREENIVFEVPKELR 310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GIEEKVVESIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNEKVNNENDLAYVTQTTLSMTDTKVM 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEVPDGSILIFSAHGVSQAVRABARSRNLTMLFDATCPLVTKVHMEVARASRKGKBAILI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SDVPVGSYLIFSAHGVSKEVQQBAEERQLT-VFDATCPLVTKVHMQVAKHAKQGREVILI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MQILLANPRGFCAGVDRAISIVERAIEMYGAPIYVRHEVVHNRYVVESLCERGAIFIEEI 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MGKPAYLI3SAADIQ3FWLQGAKCIGVTAGASAPDILVQQVIARLKDLGAGESI----ELS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VDALREQFESIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQ 239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GHAGHPEVEGTMGQYS--NPNGGMYLVESPDDVWQLNVKDENNLCFMTQTTLSVDDTSAV 178
                                                     penicillin tolerance protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative

    Yersinia pestis (strain CO92)

  61.7%; Score 1001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           54; Mismatches
DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              54; Indels
Length 316;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              7,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
  8
                                                  Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                벍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         먉
                                                                                                                                                                                                                               A; Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   R; Bouvier,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JE0403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 4
                                                                                                          Matches
                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                     lyt8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              195;
```

```
A;Cross-references: EMBL:D10483; NID:g216434; PIDN:BAA01307.1; PID:g216456
R;Blattner, F.R.; Plunkett III, G.; Bloch, C.A.; Perna, N.T.; Burland, V.;
A.; Rose, D.J.; Mau, B.; Shao, Y.
Science 277, 1453-1462, 1997
A;Title: The complete genome sequence of Escherichia coli K-12.
A;Reference number: A64720; MUID:97426617; PMID:9278503
                                                                                                                                                                                                                                                                                                                                                 A;Molecule type: DNA
A;Residues: 1-316 <BLAT>
A;Residues: 1-316 <BLAT>
A;Cross-references: GB:AE000113; GB:U00096; NID:g2367095; PIDN:AAC73140.1; PID:g178621
A;Experimental source: strain K-12, substrain MG1655
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R;Yura, T.; Mori, H.; Nagai, H.; Nagata, T.; Ishihama, A.; Fujita, N.; Isono, K.; Mizol submitted to the EMBL Data Library, December 1992 A;Description: Systematic sequencing of the Escherichia coli genome: analysis of the O.A;Reference number: S40531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Cross-references: EMBL: X54925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: DNA
A; Residues: 1-316 < BOU>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; bouvier, b:; btragter, r:
Nucleic Acids Res. 19, 180, 1991
A;Title: Nuclectide sequence of the lsp-dapB interval in Escherichia coli.
A;Reference number: JE0402; MUID:91187617; PMID:2011499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          lytB protein - Bacherichia coli (strain K-12)
C;Species: Escherichia coli
                                                                                                                                                                                                                                                                                C; Superfamily: penicillin tolerance protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Status: nucleic acid sequence not shown; translation not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Accession: E64723
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Residues: 1-316 < YUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Accession: S40552
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Accession: JE0403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C;Date: 12-Mar-1993 #sequence_revision 12-Mar-1993 #text_change 01-Mar-2002
C;Accession: JE0403; S40552; E64723; S22290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301 EEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               239 GRTAFLIDDAADIQEAWVKDAACVGVTAGASAPDILVQNVIARLREFGGGBAVTLE--GR 296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181 DALREGFPSIKEOKKODICYATONRODAVHDLAKISDLILVVGSPNSSNSNRLREIAVOL 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61 SEVPDGAILIFSAHGVSQAVRNEAKSRDLTVFDATCPLVTKVHMSVARASRRGEESILIG 120
1 MQIVLANERGECAGVDRAIBIVDQAIBAFGADIYVRHEVVHNRTVVDGLKQKGAVFIBEL 60
|||:|||||||||||: ::||||||||: 60
1 MQILLANERGECAGVDRAISIVENALAIYGADIYVRHEVVHNRYVVDSLRERGAIFIEQI 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 SDVPVGSYLIFSAHGVSKEVQQBAEERQLTVFDATCPLVTKVHMQVAKHARQGREVILIG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MQIVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEBL 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 MQILLANERGFCAGVDRAISIVENALAIYGAFIYVRHEVVHNRYVVDSLRQRGAIFIEQI 60
                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HAGHPEVEGIMGOYS--NPEGGMYLVESPEDVWTLNVKNEGKLSFWIQITLSVDDTSDVI 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GKPAYLIDTYQDIKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DALRKREPKIVGPRKDDICYATTNRQEAVRALAEQADVVLVVGSKNSSNSNRLAELAQRM 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HAGHPEVEGIMGOYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BENIVEEVPKELR 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Stragier,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62.3%; Pred. No. 6.7e-65;
                                                                                                                                                                      61.4%; Score 996; DB 2;
61.3%; Pred. No. 1.5e-64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     H.; Nagata, T.; Ishihama, A.; Fujita, N.; Isono, K.; Mizolibrary, December 1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              53;
                                                                                                                                               59
                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                            DB 2; Length 316;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61;
                                                                                                                                               58; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                               4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4.
                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            V.; Riley, M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2
```

```
Ś
                                                                                                               밁
                                                                                                                                        S
                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Cross-references: GB:BA000007; PIDN:BAB33455.1; PID:g13359488; GSPDB:GN00154
A;Experimental source: strain O157:H7, substrain RIMD 0509952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-316 <HAY>
A;Cross-references: GB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           R;Hayashi, T.; Makino, K.; Ohnishi, M.; Kurokawa, K.; Ishii, K.; Yokoyama, K.; Han, C.G. gasawara, N.; Yasunaga, T.; Kuhara, S.; Shiba, T.; Hattori, M.; Shinagawa, H. DNA Res. 6, 11-22, 2001
A;Title: Complete genome sequence of enterohemorrhagic Escherichia coli O157:H7 and genca; Reference number: A99629; MUID:21156231; PMID:11258796
A;Accession: H90632
RESULT
                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                ğ
                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                    먉
                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                     Đ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LytB protein [imported] - Escherichia coli (strain 0157:H7, substrain RIMD 0509952) C;Species: Escherichia coli C;Species: Escherichia coli C;Date: 18-Jul-2001 #sequence_revision 18-Jul-2001 #text_change 03-Aug-2001 C;Accession: H90632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Simi
Matches 192;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ક
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ;Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ;Gene: ECs0032
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              :Genetics:
                                                297
                                                                                301
                                                                                                                 239
                                                                                                                                               241
                                                                                                                                                                                   179
                                                                                                                                                                                                                  18.1
                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                              EENIVEEVPRELR 309
                                                                                                           DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL 240
                                                                                                                                                                                                                                                                                                                    SEVPDGAILIFSAHGVSQAVRNEAKSRDLTVFDATCPLVTKVHMEVARASRRGESSILIG
                                                                                                                                                                                                                                                                                                                                          SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                  MQIVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHBVVHNRTVVDGLKQKGAVFIBBL
                                                                             EEKVVFSIPKELK 313
                                                                                                                                                                                                                                                  HAGHPEVEGTMGQYS--NPEGGMYLVESPDDVWKLTVKNEEKLSFMTQTTLSVDDTSDVI
                                                                                                                                                                                                                                                                               HAGHPEVEGTMGQYEKCTEGGGIYEVBTPEDVRNIKVNNENDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                     MQILLANPRGFCAGVDRAISIVENALAIYGAPIYVRHEVVHNRYVVDSLRERGAIPIEQI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         HAGHPEVEGIMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEVEDGAILIESAHGUSQAVRNEAKSRDLTVFDATCPLVTKVHMEVARASRRGEESILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DALRKRFPKIVGPRKDDICYATTNRQEAVRALAEQABVVLVVGSKNSSNSNRLABLAQRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILYVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HAGHPEVEGTMGQYS--NPEGGMYLVESPDDVWKLTVKNEEKLSFMTQTTLSVDDTSDVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        penicillin tolerance protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    59; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 996; DB 2;
Pred. No. 1.5e-64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        58
••
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 316;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                      4
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                  178
                                                                                                                                                                                                                                                                                  180
                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                238
                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              180
                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
```

```
R;Heidelberg, J.F., Eisen, J.A.; Nelson, W.C.; Clayton, R.A.; chardson, D.; Ermolaeva, M.D.; Vamathevan, J.; Bass, S.; Qin, 1, R.R.; Mekalanos, J.J.; Venter, J.C.; Fraser, C.M.
Nature 406, 477-483, 2000
A;Title: DNA Sequence of both chromosomes of the cholera patho A;Reference number: A82035; MUID:20406833; PMID:10952301
A;Accession: G82293
A;Map position: 1
C;Superfamily: penicillin tolerance protein
                                                                                                                                               A;Cross-references: GB:AE004154; GB:AE003852; NID:g9655115; A;Experimental source: serogroup Ol; strain N16961; biotype
                                                                                                                                                                                                                     A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-320 <HEI>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          lytB protein VC0685 [imported] - Vibrio cholerae (strain N16961 serogroup O1) (Species: Vibrio cholerae (C;Species: Vibrio cholerae (C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 02-Feb-2001 C;Accession: G82293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                 A;Gene: VC0685
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     hypothetical protein lytB [imported] - Escherichia coli (strain 0157:H7, su c;Species: Escherichia coli (species: Escherichia col
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A<sub>f</sub>Gene: lytB
C<sub>f</sub>Superfamily: penicillin tolerance protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Residues: 1316 <STO>
A;Cross-references: GB:AB005174; NID:g12512712; PIDN:AAG54331.1; GSPDB:GN00145; UWGP:Z00:
A;Experimental source: strain O157:H7, substrain EDL933
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Title: Genome sequence of enterohemorrhagic Escherichia coli O157:H7 A;Reference number: A85480; MUID:21074935; PMID:11206551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Accession: G85483
                                                                                                                    Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches 192;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GKPAYLIDTYQDLKQDWLEGIEVVGYTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MQIVLANPRGPCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVPIBEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DALRKRFPKIVGPRKDDICYATTNRQEAVRALAEQAEVVLVVGSKNSSNSNRLAELAQRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DALREQFPSIKEQKXDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HAGHPEVEGTMGQYS -- NPEGGMYLVESPDDVWKLTVKNEEKLSFMTQTTLSVDDTSDVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HAGHEEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEVPDGAILIFSAHGVSQAVRNBAKSRDLTVFDATCPLVTKVHMEVARASRRGEESILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MQILLANDRGFCAGVDRAISIVENALAIYGAPIYVRHEVVHNRYVVDSLRERGAIFIEQI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 996; DB 2;
Pred. No. 1.5e-64;
59; Mismatches 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     58
7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                       pathogen
                                                                                                                                                       PIDN:AAF93850.1;
Bl Tor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gwimm, M.L.;
H.; Dragoi, J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0157:H7, substrain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4
                                                                                                                                                                                                                                                                                                                                                                                                               Vibrio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Dodson, R.J
I.; Sellers,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            D.J.; Mayhew,
K.; Apodaca,
                                                                                                                                                                                          GSPDB:GN0012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ers, P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EDL93:
```

Query

Score 987;

DB 2;

Length 320;

strai

. A . S

٧

```
~™g
                                                                                                ð
                                                                                                                                                                 밁
                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Start codon: C; Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: DNA
A; Residues: 1-318 <TIGR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Authors: Gnehm, C.L.; McDonald, L.A.; Small, K.V.; Fraser, C.M.; Smith, H.O.; Venter, A;Title: Whole-genome random sequencing and assembly of Haemophilus influenzae Rd. A;Reference number: A64000; MUID:95350630; PMID:7542800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        R;Fleischmann, R.D.; Adams, M.D.; White, O., Clayton, R.A.; Kirkness, B.F.; Kerlavage, Gocayne, J.D.; Scott, J.; Shirley, R.; Liu, L.I.; Glodek, A.; Kelley, J.M.; Weidman, D.M.; Brandon, R.C.; Fine, L.D.; Fritchman, J.L.; Fuhrmann, J.L.; Geoghagen, N.S.M.; Science 269, 496-512, 1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Cross-references: GB:L42023; TIGR:HI1007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Status: nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C;Date: 10-Sep-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            হ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   lytB protein homolog HI1007 - Haemophilus influenzae (strain Rd KW20)
C;Species: Haemophilus influenzae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      맒
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local S
Matches 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Accession: A64164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity
Matches 195; Conserv
                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                              121 HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           184;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        183 VIDELRRVF?KIQGPRKDDICYATQNRQDAVRILAEQVDVMVVVGSKNSSNSTRLKELAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121 HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNI,--KVNNPNDLAYVTQTTLSMTDTKV 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ب
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          υı
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 MQIVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                     AALKEKYPAIQGPHKNDICYATTNRQEAVRELAKLSDLVLVVGSKNSSNSNRLAELASRM
                                                                                                                                                                                                                               DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SDYPYGSYLIFSAHGYSKEYQQEAEERQLTYFDATCPLYTKYHMQYAKHAKQGREYILIG
                                            GVKSQLLDEPADIQADWFNDVKTIGITAGASAPBELGQSIISRLKRFG--ANSIBELQGL
                                                                                                GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                 HKGHPEVEGTMGQYS--NEDGGIFLIEKVEDIARLPMQENDNLTFMTQTTLSLDDTAETI
                                                                                                                                                                                                                                                                                                                                                                                                                            SEVPDGAIVIFSAHGVSQAVRQEAKDRNLKVFDATCPLVTKVHMQVARASRKGTKAILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MKIILANPRGFCAGVDRAISIVELALEIHGAPIYVRHEVVHNRFVVNGLRERGAIFVEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GREENMFFEVPKELQ 315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GIEEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KLGTPGYLIDCPQDIDPEWFVDAQLIGVTAGASAPEELVNQILDRIKELG--ATSVEEVL 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MVDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLRBIAV 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HAGHPEVEGTMGQY--ASDTGGMYLVEKPEDVVSLQAKVKDPSNLHYVSQTTLSVDETAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NEVPDDNIVIFSAHGVSQAVRQEAKERSLTVFDATCPLVTKVHMEVARASRKHMEVVLIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MKILLANPRGFCAGVDRAISIVERALELYQPPIYVRHEVVHNRFVVEGLKQRGARFVEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       penicillin tolerance protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 acid sequence not shown; translation not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          58.88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     56;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 969; DB 1;
Pred. No. 1.4e-62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred. No. 7e-64;
6; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 318;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                   240
                                                                                                                                                                                                                                                                                                    182
                                                                                                                                                                                                                                                                                                                                                              180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     120
                                            300
                                                                                                                                                                     242
                                                                                                                                                                                                                                                                                                                                                                                                                                124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C;Date: Jirma. 2000
C;Accession: D81038; D81982
C;Accession: D81038; D81982
R;Tettelin, H.; Saunders, N.J.; Heidelberg, J.; Jeffries, A.C.; Nelson, K.E.; Bisen, Hickey, E.K.; Haft, D.H.; Salzberg, S.L.; White, O.; Fleischmann, R.D.; Dougherty, B. ri, H.; Qin, H.; Vamathevan, J.; Gill, J.; Scarlato, V.; Masignani, V.; Pizza, M. Science 287, 1809-1815, 2000
Science 287, 1809-1815, 2000
A;Authors: Grandi, G.; Sun, L.; Smith, H.O.; Fraser, C.M.; Moxon, E.R.; Rappuoli, R. A;Authors: Grandi, G.; Sun, L.; Smith, H.O.; Fraser, C.M.; Moxon, E.R.; Rappuoli, R. A;Title: Complete genome sequence of Neisseria meningitidis serogroup B strain MC58.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Cross-references: GB:AE002532; GB:AB002098; NID:g7227078; PIDN:AAF42166.1; PID:g722708 A;Experimental source: serogroup B, strain MCS8 R;Parkhill, J.; Achtman, M.; James, K.D.; Bentley, S.D.; Churcher, C.; Klee, S.R.; Morel; Holroyd, S.; Jagels, K.; Leather, S.; Moule, S.; Mungall, K.; Quail, M.A.; Rajandream, Nature 404, 502-506, 2000

A;Title: Complete DNA sequence of a serogroup A strain of Neisseria menigitidis Z2491.
A;Reference number: AB1775; MUID:20222556; PMID:10761919
                                     CRESULT 10
CRESCAL TO THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE OF THE CASE
                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ફ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Residues: 1-322 <PAR>
A;Residues: 1-322 <PAR>
A;Cross-references: GB:AL162753; GB:AL157959; NID:G7379120; PIDN:CAB83914.1; PID:G737935
A:Experimental source: serogroup A, strain Z2491
                                                                                                                                                                                                                                                                               5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          멂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Status: preliminary A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Reference number: A81000;
A;Accession: D81038
A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       lytB protein NMB1831 [imported] - Neisseria meningitidis (strain MC58 serogroup C;Species: Neisseria meningitidis C;Date: 31-Mar-2000 #sequence revision 31-Mar-2000 #text_change 02-Feb-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Molecule type: DNA
A; Residues: 1-322 <TET>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local S
Matches 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               lytB; NMB1831; NMA0624
                                                                                                                                                                                                                                                                                                                                                                  242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             183 LREGEPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLGK 242
                                                                                                                                                                                                                                                                                             303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    192;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         66 VPPGATLVYSAHGVSKAVRQEAAERGFRVFDATCPLVTKVHKEVARLDAQDCEIIMIGHK 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3 IVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBBLSD 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                             KVVFSIPKELKK 314
                                                                                                                                                                                                                                                                                                                                                              DAYMYDNAGYLQRAMFEGKNKVGVTAGASAPEVLVREVLATIRGWGHET--VREGEGAEE 299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSWTDTKVMVDA 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGHA 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GHVEVEGTMGQLAP----GKMLLVETVGDVAKLEVRNPDKLAYVSQTTLSVDETKDIIAA
                                                                                                                                                                                                                                   SIVEVLPKELRR 311
                                                                                                                                                                                                                                                                                                                                                                                                                            PAYLIDTYQDLKQDWLBGIEVVGVTAGASAPEVLVQBVIDQLKAWGGETTSVRENSGIBE 302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LNARFPNIRNPHKEDICYATTNRQTAVKELAEQCDIVIVVGSPNSSNSNRLREVAASRGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EEKVVFSIPKELK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IILANPRGFCAGVDRAISIVERALEBFGAPIYVRHEVVHNKFVVDNLRBKGAVFIBDLAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                penicillin tolerance protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   59.6%;
61.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 968; DB 2;
Pred. No. 1.7e-62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches

    Xylella fastidiosa (strain 9a5c)

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 322;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
```

241

181

4.

120 120 60 60

```
A;Experimental source: strain 9a5c

R;Simpson, A.J.G.; Reinach, F.C.; Arruda, P.; Abreu, F.A.; Acencio, M.; Alvarenga, R.; Agriones, M.R.S.; Bueno, M.R.P.; Camargo, A.A.; Camargo, L.E.A.; Carraro, D.M.; Carrer, Briones, M.R.S.; Bueno, M.R.P.; Camargo, A.A.; Camargo, L.E.A.; Carraro, D.M.; Carrer, Hasheto, E.; Docena, C.; El-Dorry, H.; Facincani, A.P.; Ferreira, A.J.S.

submitted to GenBank, June 2000

A;Authors: Ferreira, V.C.A.; Ferro, J.A.; Fraga, J.S.; Franca, S.C.; Franco, M.C.; Frohm J.D.; Junqueira, M.L.; Kemper, E.L.; Kitajima, J.P.; Krieger, J.E.; Kuramae, E.E.; Laiguchado, M.A.; Madeira, A.M.B.N.; Madeira, H.M.F.; Marino, C.L.; Marques, M.V.; Martins, E.A;Authors: Martins, E.M.F.; Matsukuma, A.Y.; Menck, C.F.M.; Miracca, E.C.; Miyaki, C.Y.; F.G.; Nunes, L.R.; Oliveira, M.A.; de Oliveira, M.C.; de Oliveira, R.C.; Palmieri, D.; F.G.; Nunes, L.R.; Oliveira, M.A.; de Oliveira, M.C.; de Sa, R.G.; Santelli, R.V.; Sawasak A.Authors: da Silva, A.C.R.; da Silva, F.R.; da Silva, A.M.; Silva Jr., W.A.; da Silveira, R.; Tsuhako, M.H.; Vallada, H.; Van Sluys, M.A.; Verjovski-Almeida, S.; Vettore, A.L.; 2 A; Sentents: annotation
C;Species: Buchnera sp.
C;Date: 02-Mar-2001 #tex
C;Date: 02-Mar-2001 #tex
C;Accession: A84947
R;Shigenobu, S.; Watanabe, H.; Hattori, M.; Sakaki, Y.;
Mature 407, 81-86, 2000
A;Title: Genome sequence of the endocellular bacterial
A;Reference number: A84930; MUID:20445173; PMID:1099307
A;Accession: A84947
A;Accession: A84947
A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 D,
                                                                                                                                                                                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              귏
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Molecule type: DNA
A;Residues: 1-316 <SIM>
A;Cross references: GB:AB004050; GB:AB003849; NID:g9107594;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 02-Sep-2000 c;Accession: C82561
R;anonymous, The Xylella fastidiosa Consortium of the Organization for Nucleanize 406, 151-157, 2000
                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Title: The genome sequence of the plant pathogen Xylella fastidiosa. A;Reference number: A82515; MUID:20365717; FMID:10910347
A;Note: for a complete list of authors see reference number A59328 below
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Accession: C82561
                                                                                                                                                                                                                                 lytB protein [imported] - Buchnera
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      XF2416
                                                                                                                                                                                                                                                                                                                                                       299
                                                                                                                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     191;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ப
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ц
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HOVPDGATVIFSAHGVSQAVRRQAAQRGLKVFDATCPLVTKVHLDVARHCRTGRDMILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SDVPVGSYLIFSAHGVSKEVQQBABERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                       PESMVFALPKALR 311
                                                                                                                                                                                                                                                                                                                                                                                                 EEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                             GVASYLIDSAAEIDPAWVIDKHHIGVTAGASAPQVLVDGVLARLYELG--ATSVSEHSGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HAGHPEVEGTMGQWDQERGTGRIYLVENIDDVATLHVAQPHHLAYTTQTTLSVDDTRNII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MKVLLANPRGFCAGVDRAIEIVKRTIDMLGTPIYVRHEVVHNRFVVDDLKQRGAIFVEBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           penicillin tolerance protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           59.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 967; DB 2; L
Pred. No. 1.9e-62;
No. 1.9e-62;
                                                                                                                                                                                                                                 sp.
                                                                                                                                                                                02-Mar-2001 #text_change 23-Mar-2001
                                                                                                                                                                                                                                    (strain APS)
                                                                                                                                      M.; Sakaki, Y.; Ishikawa,
                                                     PMID:10993077
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 316;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PIDN:AAF85215.1;
                                                                                             0£
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ۲.
د
                                                                                             aphids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Nucleotide
                                                                                             Buchnera
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GSPDB: GN00:
                                                                                          ďŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT
G87665
                          몽
                                                             δ
                                                                                                                   片
                                                                                                                                                          δ
                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         R;Nierman, W.C.; Feldblyum, T.V.; Paulsen, I.T.; Nelson, K.B.; Eisen, J.; Heidelberg, J.I. B.; Laub, M.T.; DeBoy, R.T.; Dodson, R.J.; Durkin, A.S.; Gwinn, M.L.; Haft, D.H.; Kolona n, J.; Ermolaeva, M.; Wintte, O.; Salzberg, S.L.; Shapiro, L.; Venter, J.C.; Fraser, C.M. Proc. Natl. Acad. Sci. U.S.A. 98, 4136-4141, 2001
A;Title: Complete Genome Sequence of Caulobacter crescentus.
A;Reference number: A87249; MUID:21173698; pMID:11259647
A;Accession: G87665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Residues: 1-319 <STO>
A;Cross-references: GB:AP000398;
A;Experimental source: strain APS
C;Genetics:
A;Gene: lytB; BU147
C;Superfamily: penicillin toleran
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Cross-references: GB:AE005673; NID:gl3425065; PIDN:AAK25323.1; GSPDB:GN00148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-319 <STO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IytB protein [imported] - Caulobacter crescentus
C;Species: Caulobacter crescentus
C;Species: Caulobacter crescentus
C;Apte: 20-Apr-2001 #sequence_revision 20-Apr-2001 #text_change 10-May-2001
C;Accession: G87665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               뮍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                    Query Match
Best Local S
Matches 172
                                                                                                                                                                                                                                                                                                                                                                                            ;Superfamily: penicillin tolerance protein
                                                                                                                                                                                                                                                                                                                                                                                                                       Gene: CC3361
                                                                                                                                                                                                                                                                                                                                                                                                                                          Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches 168;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         12
                                                                                                                                                                                                                                                                                                                          Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                          131
                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                 61
                                                                                                                                                                                                              11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                          ب
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      بر
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                           MQIVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBBL
                        HAGHPEVIGTMGQLPE----GAVTLIEDLKDAAAWEPKDAANVAFLIQTTLSVDDTADMV
                                                                    HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                   EEAPDDRPVVFSAHGVPKSVPAEAKAROMIYLDATCPLVSKVHVEAOKHYDAGREIVLIG
                                                                                                                                           SDYPYGSYLIFSAHGYSKEYQQEAEERQLTYFDATCPLYTKYHYQYAKHAKQGREYILIG
                                                                                                                                                                                                           | SIVIASPRGFCAGVDRAIQIVERAVEKFGAPVYVRHEIVHNRHVVDRLKALGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REKVVFSIPKEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AALKNKFPEISGPNKEDICYATTNRQIAVRQLSKIADIIFVIGSNNSSNSNRLAELGKET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HRGHPEVEGTIGQYN--NKNGKIYLVESIEDVHNLSVQNSKKLNFFTQTTLSITNTKKII 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BOIPDYSVVIFSAHGVSKKVVQBAVKKKLIILDATCPLVEKVHIEVSKSSEKAIETILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SDVPVGSYLIFSAHGVSKEVQQSAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MQIVLANPRGFCAGVDRAIBIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GTFTKLISSFLDIKKKWLKNVNYIGITAGASAPBILVTEVIQYLRKIGAHKPI--EMIGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MNIILTNPRGFCAGVKRAILIVENALKVYKKTIYIRHELVHNQYVINTLRQKGVVFVEKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         penicillin tolerance protein
                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                       50.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  52.9%;
                                                                                                                                                                                                                                                                                                      48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               57;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GSPDB:GN00144
                                                                                                                                                                                                                                                                                                    Score 826.5; DB 2;
Pred. No. 2.7e-52;
8; Mismatches 86;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 858; DB 2;
Pred. No. 1.4e-54;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                             'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 319
                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                Length
```

7;

Gaps

70 9

```
lytB protein (AE006203) [imported] - Agrobacterium tumefaciens (strain C58, C;Species: Agrobacterium tumefaciens C;Date: 30-Sep-2001 #sequence_revision 30-Sep-2001 #text_change 18-Nov-2002 [C;Accession: F97453]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 C;Accession: AH2671
R;Wood, D.W.; Setubal, J.C.; Kaul, R.; Monks, D.; Chen, L.; Wood, G.B.; Chen, Y.; erage, G.; Gillet, W.; Gzant, C.; Guenthner, D.; Kutyavin, T.; Levy, R.; Li, M.; P.; Karp, P.; Romero, P.; Zhang, S. Science 294, 2317-2323, 2001
A;Authors: Yoo, H.; Tao, Y.; Biddle, P.; Jung, M.; Krespan, W.; Perry, M.; Gordon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Map position:
C; Superfamily: J
                                                                                    RESULT 14
F97453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Cross-references: GB:AE008688; PIDN:AAL41790.1; PID:g17739144; GSPDB:GN00186
A;Experimental source: strain C58 (Dupont)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Molecule type: DNA
A; Residues: 1-348 < KUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 penicillin tolerance protein [imported] - Agrobacterium tumefaciens (strain C;Species: Agrobacterium tumefaciens C;Species: 11-Jan-2002 #text_change 18-Nov-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5
                                                                                                                                                                                          ફ
                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                             ğ
                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                             5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A:Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Accession: AH2671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Title: The Genome of the Natural Genetic Engineer Agrobacterium tumefaciens C58.
A;Reference number: AB2577; MUID:21608550; PMID:11743193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  몺
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             $
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     lytB
                                                                                                                                                                 304
                                                                                                                                                                                                                                                                                                                        186
                                                                                                                                                                                                                                                                                                                                                                                                                                       118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     161;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         10
                                                                                                                                                                                                    RENSGIEEKVVFSIPKELK 313
                                                                                                                                                                                                                                     LRAGAKHSVLVQRASEI--DWNEIGDIRTVGLSAGASAPEVIVDEIIEAFKARFDTTLDL
                                                                                                                                                                                                                                                                  VQLG-KPAYLIDTYQDLKQDWLE--GIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSV 294
                                                                                                                                                                                                                                                                                                                      GVIARLQERFPAIQAPAADSICYATTNRQDAVKQAAPGCDLFIVVGAPNSSNSKRLVEVA
                                                                                                                                                                                                                                                                                                                                                                                                                                     LIGHAGHPEVBGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTK 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SDVPV---GSYLIFSAHGVSKEVQQEABERQLTVFDATCFLVTKVHMQVAKHAKQGREVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MQIVLANPRGFCAGVDRAIBIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ARETITEKLPRLL 317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GARDAHLIDDASGIDWIWEDGISRVGLTAGASAPEDLVQGVIDAISA--RFDTTVEELVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           G-KPAYLIDTYQDLKQDWLEGIEVYGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AVT -- VEETEMFLVNRELR
                                                                                                                                                                                                                                                                                                                                                         VMVDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIA
                                                                                                                                                                                                                                                                                                                                                                                                LIGHAGHPEVIGTMGQLPE----GTVSLVETVEDAGVYEPVDRENLGFVTQTTLSVDDTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HEIPAEHREOPVVFSAHGVPKSVPEDAQARNIFYLDATCPLVSKVHKQAMRHORLGRHVV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LTIRLCGPRGFCAGVDRAIQIVVLALKAYGAPVYVRHEIVHNRYVVEGLBAKGAIFVEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IEEKVVFSIPKEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                penicillin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  circular chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    46.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              tolerance protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     54.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 756; DB 2;
Pred. No. 3.7e-47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     90;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 348;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      W.; Perry, M.; Gordon-Kamm,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                185
                                                                                                                                                                                                                                         303
                                                                                                                                                                                                                                                                                                                      245
                                                                                                                                                                                                                                                                                                                                                           237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       246
                                                                  Cereon)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C58,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                McClel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Dupont
```

밁

EIRLCGPRGFCAGVDRAIQIVVLALKKYGAPVYVRHEIVHNRYVVBGLQARGAIFVEEL

```
R;Goodner, B.; Hinkle, G.; Gattung, S.; Miller, N.; Blanchard, M.; Qurollo, B.; Goldm A.; Liu, F.; Wollam, C.; Allinger, M.; Doughty, D.; Scott, C.; Lappas, C.; Markelz, Science 294, 2323-2328, 2001

A,Title: Genome Sequence of the Plant Pathogen and Biotechnology Agent Agrobacterium A,Reference number: A97359; MUID:21608551; PMID:11743194

A,Accession: P97453

A,Status: preliminary
A,Residues: 1-348 <KUR-
A,Residues: 1-348 <KUR-
A,Cross-references: GB:AE007869; PIDN:AAK86583.1; PID:g15155749; GSPDB:GN00169
C,Genetics:
                                                                                                                                                                                                                                                                                                                                                                                            lyte protein [imported] - Brucella melitensis (strain 16M)
C;Species: Brucella melitensis
C;Date: 01-Feb-2002 #sequence_revision 01-Feb-2002 #text_change 15-Feb-2002
C;Accession: AE344
R;DelVecchio, V.G.; Kapatral, V.; Redkar, R.J.; Patra, G.; Mujer, C.; Los, T.; Ivanova, F.; Mazur, M.; Goltsman, B.; Selkov, E.; Blzer, P.H.; Hagius, S.; O'Callaghan, D.; Letess Proc. Natl. Acad. Sci. U.S.A. 99, 443-448, 2002
A;Title: The genome sequence of the facultative intracellular pathogen Brucella melitens A;Reference number: AB3252; PMID:11756688
                    Ś
                                                                                                                                                             A;Gene: BMEI1459
A;Map position: I
C;Superfamily: penicillin tolerance protein
                                                                                                                                                                                                                                 A;Accession: AB3434
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-346 <KUR>
A;Residues: 1-346 <KUR>
A;Cross-references: GB:AB008917; PIDN:AAL52640.1; PID:gl7983462; GSPDB:GN00190
A;Experimental source: strain 16M
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Gene: AGR C 1414
A;Map position: circular chromosome
C;Superfamily: penicillin tolerance protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AE3434
                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local
                                                                                           Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           118 LIGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTK 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       161;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 SDVPV---GSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVI 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         70 HEIPAEHREQPVVESAHGVPKSVPEDAQARNIFYLDATCPLVSKVHKQAMRHQRLGRHVV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         10 LTIRLCGPRGFCAGVDRAIQIVVLALKAYGAPVYVRHEIVHNRYVVEGLEAKGAIFVEEL
                                                                                           Similarity
MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAFIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AVT -- VEETSHFLVNRELR 320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GVIARLQERFPAIQAPAADSICYATTNRQDAVKQAAPGCDLFIVVGAPNSSNSKRLVEVA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VMVDALREQEPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIA 237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RENSGIEEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LRAGAKHSVLVQRASEI--DWNEIGDIRTVGLSAGASAPEVIVDEIIEAFKARFDTTLDL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VQLG-KPAYLIDTYQDLKQDWLE--GIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LICHACHPEVIGTMGQLPE----GTVSLVETVEDAGVYEPVDRENLGFVTQTTLSVDDTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  46.6%; Score 756; DB 2; ilarity 50.5%; Pred. No. 3:7e-47; Conservative 54; Mismatches 90
                                                                       Conservative
                                                                    46.2%; Score 750; DB 2
47.7%; Pred. No. 1e-46;
tive 59; Mismatches
                                                                                                                  'n
                                                                       88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       90;
                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 348;
                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  245
                         60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    294
                                                                       ហ
•-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Goldman,
kelz, B.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              tum
```

유 당 양	g 8	යි දී	B 8	\$ 8
291 304	238 244	178 184	118 128	61 68
291 TTSVRENSGIEEKVVFSIPKELK 313	238 VQLG-KPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGB 290 : : : :	178 VMVDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIA 237 :: :: :: : : : : : : :	118 LIGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSNTDTK 177	61 SDVPVGSYLIFSAHGVSKEVQQBAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVI 117
	வ 6	ធ រ៉ា	ដ 7	7 .7

Search completed: January 29, 2004, 15:55:34 Job time: 10.3566 secs

```
Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OM protein - protein search, using sw mode!
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  No. is the number of results predicted by chance to have a greater than or equal to the score of the result being printed, s derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MQIVLANPRGFCAGVDRAIE......GIEEKVVFSIPKELKKHMQA 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2004, 15:41:08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GenCore version (c) 1993 - 2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            47026705 residues
ISPH PSEAE
ISPH YERPE
ISPH SALTI
ISPH BCOLI
ISPH BCOLI
ISPH BCOLI
ISPH SALTY
ISPH VIBRY
ISPH VIBRY
ISPH VIBRY
ISPH YANCP
ISPH HAEIN
ISPH PASMI
ISPH PASMI
ISPH PASMI
ISPH BUCAP
ISPH BUCAP
ISPH BUCAP
ISPH BUCAP
ISPH BUCAP
ISPH BUCAP
ISPH BUCAP
ISPH RAIM
ISPH CORGL
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH ROME
ISPH CHLAMI
ISPH CHLAMI
ISPH CHLAMI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ISPH_ACIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; Search time 5.98823 Seconds (without alignments) 2497.314 Million cell updates
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5.1.6
Compugen
  Q9a345
Q8k9z4
Q8k9z4
Q9kfbm1
Q9fbm1
P58673
Q8nrm2
Q92rg2
Q8yfr1
Q50409
Q985w3
Q9x781
Q9x781
Q9x781
Q9x6p2
Q9p159
                                                                                                                                                                                                                                                                                      Q87s87
Q8det0
Q9de40
Q9be117
Q8pbg4
Q8pbg4
P44976
P449760
Q9jr39
Q9jr39
Q9pas9
P57247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       P58678
P22565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q9hvm7
P58680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       P58679
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q9rbj0 acinetobact
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 cell updates/sec
                                                                                                                                                                                                                                                                                                                        4 xanthomonas
6 haemophilus
0 pasteurella
9 neisseria m
9 xylella fas
7 ralstonia s
                                                                          rhizobium m
brucella me
mycobacteri
rhizobium l
mycobacteri
                                                                                                                                                                                                                                                                                                                                                                                                                                                             7 vibrio para
0 vibrio vuln
4 vibrio chol
                      chlamydia
chlamydia
                                                                                                                                                                        agrobacteri
corynebacte
                                                                                                                                                                                                                                buchnera ap
burkholderi
                                                                                                                                                                                                                                                                    buchnera ap
caulobacter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             yersinia pe
                                                                                                                                                                                                              streptomyce
                                                                                                                                                                                                                                                                                                        wiggleswort
                                                                                                                                                                                                                                                                                                                                                                                                                                           xanthomonas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       salmonella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         salmonella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 pseudomonas
                                                                                                                                                                                                                            RESULT 1
ISPH_ACICA
ID TSPH_ACICA
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC Q9RBJO,
AC SIPH OR LYPE,
OS ACINECOACCE
CO MOTAXELIACE
OX MEDLINE=2024
RE SEQUENCE FROM
RC STRAIN=BD413
RX MEDLINE=2024
RA HETZBETG C.,
RT "COMB, A NOVE
COMB, A NOVEL
RA HETZBETG C.,
RT OF GROWTH DHA
RL AICH. MICRObil
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CC -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CC -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!- FUNCTION:
CO -!
      밁
                                ð
                                                                            g
                                                                                                            S
                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRAIN=BD413 / ADP1;

MEDLINE=20224825; PubMed=10763755;

Herzberg C. Friedrich A., Averhoff B.;

"ComB, a novel competence gene required for natural transformation of acinetobacter sp. BD413: identification, characterization and analysis of growth phase-dependent regulation.";

Arch. Microbiol. 173:220-228(2000)

-i- FUNCTION: Converts 1-bydroxy-2-methyl-2-(E)-butenyl 4-diphosphate into isopencenyl diphosphate (IPP) and dimethylallyl diphosphate (DMAPP) (By similarity).

-i- PARTHWAY: Nonmevalonate terpenoid biosynthesis pathway; seventh
                                                                                                                                                                                                                            Isoprene biosynthesis.
SEQUENCE 316 AA; 34943 MW; 29F071CEF2B9A762 CRC64;
                                                                                                                                                                                                                                                                  EMBL; AF027189; AAD55804.1;
HAMAP; MF_00191; -; I
InterPro; IPR003451; LytB.
Pfam; PF02401; LYTB; 1.
TIGRFAMS; TIGR00216; ispH_ly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Acinetobacter calcoaceticus.
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Moraxellaceae; Acinetobacter.
MCBI_TaxID=471;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IspH protein.
ISPH OR LYTB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           621.5
565
527
527
513
443.5
433
415.5
389.5
389.5
3415.5
                                                                                                                                                        204;
    5
                                        43
                                                                                                                    ш
                                  SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
  DQVPDDSIVIFSAHGVSKAVQQBAEHRGLKVFDATCPLVTKVHIBVIKYAREGTEAILIG
                                                                                                  MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                            METVLANPRGFCAGVDRATATVNRALECFNPPTYVRHEVVHNKFVVDDLRQRGATFVDEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (Rel.
                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         38.3
34.8
34.8
31.6
31.6
31.6
20.5
20.7
20.6
31.6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        . 41, Created)
. 41, Last sequence. 41, Last annotation.
                                                                                                                                                                        65.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       180
314
23314
23314
277
277
277
277
                                                                                                                                                                                                                                                                _ispH_lytB; 1.
                                                                                                                                                      48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ISPH_LISMO
ISPH_THETN
ISPH_AQUAB
ISPH_CAMJE
ISPH_SYNY3
ISPH_HBLPY
ISPH_THEMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ISPH
HASI
HASI
                                                                                                                                                    Score 1064.5; DB 1;
Pred. No. 2.1e-68;
8; Mismatches 58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PSEFL
DEIRA
BACSU
BACHD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    316 AA
                                                                                                                                                      Indels
                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     P21864
Q9rsg0
P54473
Q9kd37
P58676
Q8ra76
Q8ra7625
P5867525
P54644
P94644
Q55643
Q9x1f7
                                                                                                                                                      ω
-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       campylobact
synechocyst
helicobacte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             deinococus
bacillus sa
bacillus ha
bacillus ha
bacillus ha
bisteria mo
thermoanaer
aquifex aeo
clostridium
```

Result

ö

Score

Match Query

Length

멾

ä

826.5 824.5 813.5 791 756

752.5 750 743.5 740 733 717 667 663

60

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 s

BC

seq

length:

0 20000000000

Pred. No.

SwissProt_41:*

Title: Perfect score:

US-09-941-947A-18 1623 1 MQIVLANPRGFCAGV

January 29,

Copyright

Scoring table:

BLOSUM62 Gapop 10.0 ,

Gapext 0

127863 segs,

```
RESHULT
IN THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            멄
Query Match
Best Local Sim
Matches 198;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.

STRAIN-ANTCC 15692 / PAO1;

MEDIINE=20437337; PubMed=10984043;

MEDIINE=20437337; PubMed=10984043;

Scover C.K., Pham X.-Q.T., Erwin A.L., Mizoguchi S.D., Warrener P.,

Hickey M.J., Brinkman F.S.L., Hufnagle W.O., Kowalik D.J., Lagrou M.,

Garber R.L., Goltry L., Tolentino E., Westbrock-Wadman S., Yuan Y.,

Brody L.L., Coulter S.N., Polger K.R., Kas A., Larbig K., Lim R.M.,

Smith K.A., Spencer D.H., Wong G.K.-S., Wu Z., Paulsen I.T.,

Smith K.A., Saler M.H., Hancock R.E.W., Lory S., Olson M.V.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ISPH PSEAE
Q9HVW7;
16-OCT-2001
16-OCT-2001
28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                               This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                HAMAP; MF 00191; -; 1.
InterPro; IPR003451; Lyth.
Pfam; PF02401; LYTB; 1.
TIGRRAMs; TIGR00216; ispH lytb; 1.
Isoprene biosynthesis; Complete proteome.
SEQUENCE 314 AA; 34762 MW; 4B3E07B68663EEB6 CRC64;
                                                                                                                                                                                                                                                                                                EMBL; AE004869; AAG07945.1;
PIR; G83076; G83076.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "Complete genome sequence of Pseudomonas aeruginosa PAO1, an opportunistic pathogen.";
Nature 406:959-964(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PSEAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=287;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacteria; Proteobacteria; Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pseudomonadaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ISPH protein.
ISPH OR LYTB OR PA4557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (last) step.
SIMILARITY: BELONGS TO THE ISPH FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FUNCTION: Converts 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate into isopentenyl diphosphate (IPP) and dimethylallyl diphosphate (DMAPP) (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PATHWAY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HEGHPEVEGTMGQYDX-SKGGHIYLVEDEADVEALAVNHPEKLAFVTQTTLSIDDTAKVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GKPAYLIDTYQDLKQDWLEGIEVVCVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EBNITFSLPKELR 310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GKAAYLVDNADQLEQQWFDGVAKIGVTAGASAPEILIKQVIQRLQDWGAE--APKELDGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DALRTKFPQTQGPRKDDTCYATQNRQDAVRDLASRCDVVLVVGSPNSSNSNRLRELAERM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DALREQFPSIKEQKXXXXICYATQNRQDAVHXLAKISXLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Rel.
   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Nonmevalonate terpenoid biosynthesis pathway; seventh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           40, Created)
40, Last seq
41, Last ann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pseudomonas
                         63.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Last sequence update)
Last annotation update)
      49,
Score 1028.5;
Pred. No. 7.5e.
19; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ã
                            5e-66;
                                                     DB 1; Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pseudomonadales;
Indels
u
--
   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                240
Ν
```

ક

MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL

60

commercial

```
RESULT
ISTRUCT
IN THE PROPERTY
IN THE PROPERTY
IN THE PROPERTY
IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY IN THE PROPERTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       멼
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  дö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
This SWISS-PROT entry is copyright. It is produced through a collab-
between the Swiss Institute of Bioinformatics and the EMBL outst
the European Bioinformatics Institute. There are no restrictions
use by non-profit institutions as long as its content is in
modified and this statement is not removed. Usage by and for com
                                                                                                                                                                                                                                                                                                 "Genome sequence of Yersinia pestis KIM.";

J. Bacteriol. 184:4601-4611(2002).

-!- FUNCTION: Converts 1-bydroxy-2-methyl-2-(E)-butenyl 4-diphosphate into isopentenyl diphosphate (IPP) and dimethylallyl diphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    28-FEB-2003
28-FEB-2003
28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDIJNE=21470413; PubMed=11586360;
Parkhill J., Wren B.W., Thomson N.R., Titball R.W., Holden M.T.G.,
Prentice M.B., Sebalhia M., James K.D., Churcher C., Mungall K.L.,
Baker S., Basham D., Bentley S.D., Brooks K., Cerdeno-Tarraga A.M.,
Chillingworth T., Cronin A., Davies R.M., Davis P., Dougan G.,
Chillingworth T., Cronin A., Davies R.M., Davis P., Dougan G.,
Peltwell T., Hamlin N., Holroyd S., Jagels K., Karlyshev A.V.,
Leather S., Moule S., Oyston P.C.F., Quail M., Rutherford K.,
Simmonds M., Skelton J., Stevens K., Whitehead S., Barrell B.G.;
"Genome seguence of Yersinia pestis, the causative agent of plague."
Nature 413:523-527(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            YERPE
ISPH_1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=22137863, PubMed=12142430;
Derg W., Burland V., Plunkett G. III, Boutin A., Mayb
Perna N.T., Rose D.J., Mau B., Zhou S., Schwartz D.C.
Petherston J.D., Lindler L.B., Brubaker R.R., Plano G
                                                                                                                                                                                                                                                                                                                                                                                                                                   Perry R.D.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Petherston J.D., Lindler L.E., Brubaker R.R., Plano G.V., Straley S.C., McDonough K.A., Nilles M.L., Matson J.S., B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN=KIM5 / Biovar Mediaevalis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
STRAIN=CO-92 / Biovar Orientalis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Enterobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IspH protein.
ISPH OR LYTB OR YPO0477 CR Y3697
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  89854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Yersinia pestis
                                                                                                                                                                                                                                             into isopentenyl diphos (DMAPP) (By similarity) PATHWAY: Nonmevalonate
                                                                                                                                                                            (last) step.
SIMILARITY: BELONGS TO THE ISPH PAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               YERPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6,1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GTPAYLIDGAEDMQRGWFDGVRRIGITAGASAPEVLVRGVIAQLREWG--ASEEQELEGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DQVPNNVIVIFSAHGVSQAVRXEAEGRGLKVFDATCPLVTKVHMEVVRYSRDGHECVLIG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EENITFSMPKELR 310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DALRAKFPQIQGPRKNDICYATQNRQDAVKBLADQCDMVLVVGSPNSSNSNRLRELAERM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MQIKLANPRGFCAGVDRAIEIVNRALDVFGPPIYVRHEVVHNKFVVDNLRQRGAIFVEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HEGHPEVEGIMGQYD-ASNGGAIYLVEDEADVAALEVRKPEALHYVTQTTLSMDDISKVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (Rel. 41, Created)
(Rel. 41, Last sequence up
(Rel. 41, Last annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Yersinia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gammaproteobacteria; Enterobacteriales;
                                                                                                                                                                                                                                                terpenoid biosynthesis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3<u>1</u>7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mayhew G.F.,
                                                                                                                                                                                                                                             pathway;
                                                                                                                                                                                                                                                                                                                                        4-diphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Blattner
                                                                                           EMBL outstation
                                                                                                                     a collaboration
                                                                                                                                                                                                                                                seventh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        plague.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Liss
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60
```

18.

```
RESULT
ISPANIA
ID ISA
ID ISA
ID ISA
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CONTINUE
CON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    日
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SSERRERERESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local S
Matches 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ISPH SALTI
P58678;
28-FEB-2003
28-FEB-2003
15-SEP-2003
                                                                       MEDILINE=21534947; PubMed=11677608;
Parkhill J., Dougan G., James K.D., Thomson N.R., Pickard D., Wain J Churcher C., Mungall K.L., Bentley S.D., Holden M.T.G., Sebaihia M., Baker S., Basham D., Brooks K., Chillingworth T., Connerton P., Cronin A., Davis P., Davies R.M., Dowd L., White N., Farrar J., Feltwell T., Hamlin N., Haque A., Hien T.T., Holtroyd S., Jagels K., Krogh A., Larsen T.S., Leather S., Moule S., O'Gaora P., Parry C., Quail M., Rutherford K., Simmonds M., Skelton J., Stevens K., Whitehead S., Barrell B.G.;
"Complete genome sequence of a multiple drug resistant Salmonella enterica serovar Typhi CT18.";
Nature 413:848-852(2001).
SEQUENCE FROM N.A.
STRAIN=TY2 / ATCC 700931;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL; AJ414143; LALOUZZ...,
EMBL; AE013973; AAM87245.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Salmonella typhi.
Bacteria; Proteobacteria; Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PIR; AC0059; AC0059.
HAMAP; MF 00191; -; 1.
InterPro; IPR003451; LytB.
Pfam; PF02401; LYTB; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Enterobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ISPH Protein.
ISPH OR LYTB OR STY0058 OR T0051.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pfam; PF02401; LYTB; 1
TIGREAMS; TIGRO0216; ispH_lytB; 1.
Isoprene biosynthesis; Complete proteome.
SEQUENCE 317 AA; 34708 MW; C40E953DCBA12168 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               200;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            بر
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ١,,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWG-GETTSVERNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GREENI VFEVPKELR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GIBEKVYFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VDALREOFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GHAGHPEVEGTMGQYS - - NPNGGMYLVESPDDVWQLNVKDENNLCPMTQTTLSVDDTSAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEVPDGSILIESAHGVSQAVRAEARSRNITMLFDATCPLVTKVHMEVARASRKGKEAILI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SDVPVGSYLIFSAHGVSKEVQQEAEERQLT-VFDATCPLVTKVHMQVAKHAXQGREVILI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MQIVLANPRGECAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MGKPAYLIDSAADIQEFMLQGAKCIGVTAGASAPDILVQQVIARLKDLGAGESI---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       I DALNTREPKI VGPRKDDI CYATTNIRQEAVRNLANDADI VLVVGSKNSSNSNILAELI VQR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MOILLANDRGECAGVORAISIVERAIEMYGADIYVRHEVVHNRYVVESLCERGAIFIEEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (Rel. 41, Created)
(Rel. 41, Last seq
(Rel. 42, Last ann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Salmonella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sequence update)
annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               54;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ALT_INIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pred. No. 3.3e
4; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pred. No. 3.3e-65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            54; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                   ٠
;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   : 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6
```

```
먉
                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local S
Matches 195
                                                                                                                                                                                   ECOLI
Escherichia coli,
Escherichia coli 06, and
Escherichia coli 0157:H7.
Bacteria; Proteobacteria; Gammaj
Enterobacteriaceae; Escherichia.
                                                                                                 P22565;
01-AUG-1991 {Rel. 19, Created}
01-AUG-1991 {Rel. 19, Last seq
28-FEB-2003 {Rel. 41, Last ann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pfam; PF02401; LYTB; 1
TIGRFAMS; TIGR00216; ispH_lytB; 1.
Isoprene biosynthesis; Complete proteome.
SEQUENCE 316 AA; 34513 MW; 9536031F11F6DC42 CRC64;
                                                                           IspH protein.
ISPH OR LYTB OR B0029
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL; AL627265; CAD01204.1;
EMBL; AE016834; AA067784.1;
HAMAP; MF_00191; -; 1.
InterPTO; IPR003451; LytB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              use by non-profit institutions as long as its content modified and this statement is not removed. Usage by an entities requires a license agreement (See http://www.isborsend an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              J. Bacteriol. 185:2330-2337(2003).

-I: FUNCTION: Converts 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate into isopentenyl diphosphate (IPP) and dimethylallyl diphosphate (DMAPP) (By similarity).

-I: PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; seventh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Deng W., Liou S.-R., Plunkett G. III, Mayhew G.F., Rose D.J.,
Burland V., Kodoyianni V., Schwartz D.C., Blattner F.R.,
"Comparative genomics of Salmonella enterica serovar Typhi strains Ty2
and CT18.";
                                                                                                                                                                   Hası
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (last) step.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the European Bioinformatics Institute.
                                                                                                                                                                     ECOLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SWISS-PROT entry is copyright. It is produced through a collab
een the Swiss Institute of Bioinformatics and the EMBL outst
European Bioinformatics Institute. There are no restrictions
                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                    179
                                                                                                                                                                                                                                               297
                                                                                                                                                                                                                                                                            301
                                                                                                                                                                                                                                                                                                       239
                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                195;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                            EENIVFEVPKELR 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MQIVLANPRGFCAGYDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                          EEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                  GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                                                                                                                                                                                                                                                                                                                                                 DALRKRFFKIVGFRKDDICYATTNRQBAVRALABQADVVLVVGSKNSSNSNRLABLAQRM
                                                                                                                                                                                                                                                                                                                                                                               DALREOPPSIKECKKODICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                           HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEVPDGAILIFSAHGVSQAVRNEAKSRDLTVFDATCPLVTKVHMEVARASRRGEESILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SDVPVGSYLIFSAHGVSKEVQQBAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MQILLANPRGFCAGVDRAISIVENALAIYGAPIYVRHEVVHNRYVVDSLRQRGAIFIEQI
                                                                                                                                                                                                                                                                                                         GRTAFLIDDAADIQEAWVKDAACVGVTAGASAPDILVQNVIARLREFGGGEAVTLE--GR
                                                                                                                                                                                                                                                                                                                                                                                                                              HAGHPEVEGTMGQYS--NPEGGMYLVESPEDVWTLNVKNEGKLSFMTQTTLSVDDTSDVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                   STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61.7%;
                                                                           윷
              Gammaproteobacteria; Enterobacteriales;
                                                                                                        annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             53
                                                                                                                        sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 1001; DB 1;
Pred. No. 6.7e-64;
3; Mismatches 61;
                                                                           S
                                                                           Z0034 OR ECS0032
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PAMILY.
                                                                                                                                                                   316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 316;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                              178
                                                                                                                                                                                                                                                                                                                                                                  238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         its
```

```
STRAIN=0157:H7 / EDL933 / ATCC 700927;
MEDLINE=21074935; PubMed=11206551;
Perna N.T., Plunkett G. III, Burland V., Mau B., Glasner J.D.,
Rose D.J., Mayhew G.F., Evans P.S., Gregor J., Kirkpatrick H.A.,
Posfai G., Hackett J., Klink S., Boutin A., Shao Y., Miller L.,
Grotbeck E.J., Davis N.W., Lim A., Dimalanta E.T., Potamousis K.,
Apodaca J., Anantharaman T.S., Lin J., Yen G., Schwartz D.C.,
Welch R.A., Blattner F.R.;
"Genome servence of contents."
                                                             "Complete genome sequence of enterohemorrhagic Escherichia 0157:H7 and genomic comparison with a laboratory strain K-1 DNA Res. 8:11-22/2001).
                                                                                                       STRALN=0157:H7 / RIMD 0509952;
MEDLINE=21156231; PubMed=11258796;
Hayashi T., Makino K., Ohnishi M., Kurokawa K., Ishii Han C.-G., Ohtsubo E., Nakayama K., Murata T., Tanaka Iida T., Takami H., Honda T., Sasakawa C., Ogasawara NKuhara S., Shiba T., Hattori M., Shinagawa H.;
                                                                                                                                                                                                                                                                                                                                                                                                                           "Extensive mosaic structure revealed by the complete genome of uropathogenic Escherichia coli."; proc. Natl. Acad. Sci. U.S.A. 99:17020-17024(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=22388234; PubMed=12471157; Welch R.A., Burland V., Plunkett G. III, Redford P., Rowelch R.A., Burthes L., Liou S.-R., Boutin A., Hackett Mayhew G.F., Rose D.J., Zhou S., Schwartz D.C., Perna t Mobley H.L.T., Dornenberg M.S., Blattner F.R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=97426617; PubMed=9278503;
Blattner F.R., Plunkett G. III, Bloch C.A., Perna N.T., Burl Riley M., Collado-Vides J., Glasner J.D., Rode C.K., Maybew
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bouvier J., Stragier P.;
"Nucleotide sequence of the lsp-dapB interval in Escherichia coli.";
Nucleic Acids Res. 19:180-180(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=21819424; PubMed=11818558;
Rohdich F., Hecht S., Gaertner K., Adam P.,
Arigoni D., Bacher A., Bisenreich W.;
MEDLINE=93163053; PubMed=8432714;
Gustafson C.E., Kaul S., Ishiguro
                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A. STRAIN=0157:H7 / E
                                                                                                                                                                                          STRAIN=0157:H7
                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Science
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gregor J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Systematic sequencing of the Escherichia the 0-2,4 min region.":
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Proc. Natl. Acad. Sci. U.S.A. 99:1158-1163(2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN=K12 /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Isono K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Yura T., Mori H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE=92334977; PubMed=1630901;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=91187617;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Studies on the nonmevalonate terpene biosynthetic pathway: metabolic
                                 IDENTIFICATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=562,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complete genome sequence of Escherichia coli K-12.^n; nce 277:1453-1474(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of IspH
                                                                                                                                                                                                                                     409:529-533 (2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Shao
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .4 min region.";
Acids Res. 20:3305-3308(1992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .4 min
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mizobuchi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Davis N.W.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MG1655;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (LytB)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CFT073 / ATCC 700928;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              217992,
                                                                                                                                                                                       RIMD 0509952
                                                                                                                                                                                                                                                    of enterohaemorrhagic Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Nagai H., Nagata T., Ishihama A., Fujita
ni K., Nakata A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PubMed=2011499;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Kirkpatrick H.A., Goeden M.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                83334;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CHARACTER I ZATION
Ishiguro E.E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Krieger C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            genome: analysis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Roesch
                                                                                                                                        37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        t J., Stroud
N.T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Rose D.J.,
                                                                                                                                                                                                                                                      O157:H7.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Amslinger S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Burland
                                                                                                                                          Yokoyama K.,
Tobe T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 G.F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                            sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ۵.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .
.
```

```
PATHWAY.

PATHWAY.

PATHWAY.

ATCC 23716 / DSM 498;

STRAINE=21311595; PubMed=11418107;

ALLINCICEK B., Kollas A.-K., Eberl

Hintz M., Beck E., Jomaa H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           in penicillin t
J. Bacteriol. 1
[9]
                                                                                                                                                                                                                                                                                                                                                                                                                                      MCAteer S., Coulson A., McLennan N., Masters M.;

"The LytB gene of Escherichia coli is essential and specifies a product needed for isoprenoid biosynthesis.";

J. Bacteriol. 183:7403-7407(2001).

-i-FUNCTION: Converts 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate into isopentenyl diphosphate (IPP) and dimethylallyl diphosphate (DMAPP). Is also involved in penicillin tolerance and control of the stringent response. Seems to directly or indirectly interact with relA to maintain it in an inactive form during normal growth.

-i-PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; seventh
                                                                                                                                                                                                                                                                                entitles requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                              use by non-profit institu
modified and this statement
entities requires a license
                                                                                                                                                                                                                                                                                                                                                 the
                                                                                                                                                                                                                                                                                                                                                                              This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "LytB, a novel gene of the 2-C-methyl-D-erythritol of isoprenoid biosynthesis in Escherichia coli.";
                                                                                                                                                                                                                                                                                                                                                                                                             -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=21574179; PubMed=11717301;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Identification of the Escherichia coli lytB gene, which is involved
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          penicillin tolerance and control Bacteriol. 175:1203-1205(1993).
                                                                                                                                                                                                                                                                                                                                            ween the Swiss Institute of Bioinf
European Bioinformatics Institute
                                                                                                                                                                                                                                                                                                                                                                                                          (last) step.
SIMILARITY: BELONGS TO THE ISPH FAMILY.
                                                                                                                                                                                                                                                                                                                                                           SWISS-PROT entry is copyright. It is produced through a collaboration en the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                     X54945; CAA38707.1; -.
D10483; BAB96598.1; -.
AE000113; AAC73140.1; -.
AE016755; AAN78533.1; ALT_INIT.
AE005179; AAG54331.1; -.
AP002550; BAB33455.1; -.
                                                                                                                                                                                                                                                 AY062212; AAL38655.1; -.
                                                                                                                                                                                                                                                                                                                               institutions as long as
                                                                                                                                                                                                                                                                                                                is not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3
                                                                                                                                                                                                                                                                                                                removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         of the stringent response.";
                                                                                                                                                                                                                                                                                                 (See
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Wiesner
                                                                                                                                                                                                                                                                                                                                              There are no
                                                                                                                                                                                                                                                                                                 http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                Usage
                                                                                                                                                                                                                                                                                                                               its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4-phosphate pathway
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sanderbrand
                                                                                                                                                                                                                                                                                                                Ą
                                                                                                                                                                                                                                                                                                                                              restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ŝ
                                                                                                                                                                                                                                                                                                                                 В
```

```
δ
                                  8
                                                                 S
                                                                                                 밁
                                                                                                                             á
                                                                                                                                                               밁
                                                                                                                                                                                          .5
                                                                                                                                                                                                                              Query Match
Best Local S
Matches 192
                                                                                                                                                                                                                                                                                                                                                        PIR; G85483; G85483.

PIR; H90632; H90632.

PIR; JE0403; JE0403.

EcoGene; EG11081; ispH.

HAMAP; MF_00191; ; 1.

InterPro; IPR003451; LytB.
                                                                                                                                                                                                                                                                                        TIGRFAMS; TIGR00216; ispH lytB; 1.
Isoprene biosynthesis; Complete pr
SEQUENCE 316 AA; 34774 MW; 087
     181
                                   121
                                                                    121
                                                                                                                                                                                                                                                                                                                                          PF02401; LYTB; 1
                                                                                                 61
                                                                                                                              61
                                                                                                                                                                                                                                              Similarity
                                                                                               SEVPDGAILIFSAHGVSQAVRUBAKSRDLTVFDATCPLVTKVHMEVARASRRGEESILIG
                                                                                                                              SDVEVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                               MQILLANPRGFCAGVDRAISIVENALAIYGAPIYVRHEVVHNRYVVDSLRERGAIFIEQI
                                                                                                                                                                                     MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFI3EL
 DALREQFPSIKEQKKODICYATONRODAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                 HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNENDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                            61.4%;
                              --NPEGGMYLVESPDDVWKLTVKNEEKLSFMTQTTLSVDDTSDVI
                                                                                                                                                                                                                                  59;
                                                                                                                                                                                                                                              Score 996;
Pred. No. 1
                                                                                                                                                                                                                                                                                              proteome.
0E7B378BD49AB771 CRC64;
                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                              DB 1;
.5e-63;
                                                                                                                                                                                                                                  58
                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                4
```

딹

DALRKRPPKIVGPRKDDICYATTNRQEAVRALAEQAEVVLVVGSKNSSNRLAELAQRM

178 240

ψ.

238

```
RRESULTY
ID ISPH S
PROPERTY
ID ISPH S
AC PROPE
PROPE
PROPE
PROPE
PROPE
PROPE
PROPE
PROPE
PROPE
PROPE
RA RYAN
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COULTI
RA COUL
                                                              g
                                                                                                                Ś
                                                                                                                                                                밁
                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ϋ́S
                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRAIN-LT2 / SGSC1412 / ATCC 700720;
MEDLINE-21534948; PubMed=11677609;
MCClelland K., Sanderson K.E., Spieth J., Clifton S.W., Latreille P.
Courtney L., Porwollik S., Ali J., Dante M., Du F., Hou S., Layman
Leonard S., Nguyen C., Scott K., Holmes A., Grewal N., Mulvaney E.,
Ryan E., Sun H., Florea L., Miller W., Stoneking T., Nhan M.,
Waterston R., Wilson R.K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            28-FEB-2003
28-FEB-2003
28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL; AE008695; AAL19013.1;
StyGene; SG?????; ispH.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ISPH SAI
P58679;
                                                                                                                                                                                                                                                                                                                                                                                                                                     HAMAP; MF 00191; -; I.
InterPro; IPR003451; LytB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Nature 413:852-856(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Complete genome sequence of Salmonella enterica serovar Typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Enterobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Salmonella typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ISPH protein.
ISPH OR LYTB OR STM0049.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SIMILARITY: BELONGS TO THE ISPH FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; seventh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FUNCTION: Converts 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate into isopentenyl diphosphate (IPP) and dimethylallyl diphosphate (DMAPP) (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             last) step.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SALTY
                                                                            61
                                                                                                                                                                                                                                                                                                                                                 PF02401; LYTB; 1.

AMs; TIGR00216; ispH_lytB;
ene biosynthesis; Complete
NCE 316 AA; 34527 MW; 9
                                                                                                                     6
                                                                                                                                                                                                                                                           194;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                 Similarity
HAGHPEVEGTMGQYEXCTEGGGIYLVETPEDVRNLKVNNADLAYVTQTTLSMTDTXVMV
                                                                     SEVPDGAILIFSAHGVSQAVRNEAKSRDLTVFDATCPLVTKVHMEVARASRRGEESILIG
                                                                                                  SDYPYGSYLIFSAHGYSKEYQQBAEERQLTYFDATCPLYTKYHMQYAKHAKQGREYILIG
                                                                                                                                                              MQILLANDRGFCAGVDRAISIVENALAIYGAPIYVRHEVVHNRYVVDSLRKRGAIFIEQI
                                                                                                                                                                                      MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEBE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EEKVVPSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EENIVEEVPKELR 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (Rel. 41, Created)
(Rel. 41, Last seq
(Rel. 41, Last ann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Salmonella.
                                                                                                                                                                                                                                                      61.4%; Score 996; DB 1; Length 316; 62.0%; Pred. No. 1.5e-63; Live 54; Mismatches 61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sequence update) annotation updat
                                                                                                                                                                                                                                                                                                                                          proteome.
953151A411FBF522 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               316 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       update)
                                                                                                                                                                                                                                                      4
                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     т D.,
                                                                                                                   120
                            180
                                                                                                                                                                6
                                                                     120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  300
                                                                                                                                                                                                                                                      Ŋ
                                        Ś
                                                                                             용
                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                맑
                                                                                                                                                                                                                          Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             먉
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ₽
                                                                                                                                                                                                                                                                                               Query Match
Best Local :
                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                      EMBL; AP005074; BAC58800.1; -.
HAMAP; MF 00191; -; 1.
Isoprene biosynthesis; Complete proteome.
SEQUENCE 321 AA; 35721 MN; DFEB4ABA39970798 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                           entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               use by non-profit institutions as long as its content i modified and this statement is not removed. Usage by and entities requires a license arrowner.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Makino K., Oshima K., Kurokawa K., Yokoyama K., Uda T., Tagomori K. Ijima Y., Najima M., Nakano M., Yamashita A., Kubota Y., Kimura S. Yasunaga T., Honda T., Shinagawa H., Hattori M., Iida T.; "Genome sequence of Vibrio parahaemolyticus: a pathogenic mechanism distinct from that of V. cholerae.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ISPH_VIBPA
Q87587;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Vibrio parahaemolyticus.
Bacteria; Proteobacteria;
Vibrionaceae; Vibrio.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -i- FUNCTION: Converts 1-hydroxy-2-methyl-2-(S)-butenyl 4-diphosphate (IPP) and dimethylallyl diphosphate (IMAPP) (By similarity).
-i- PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; seventh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -!- SIMILARITY: BELONGS TO THE ISPH FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAIN=RIMD 2210633 / Serotype 03:K6;
MEDLINE=22508454; PubMed=12620739;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ISPH OR LYTB OR VP0537.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15-SEP-2003 (Rel.
15-SEP-2003 (Rel.
15-SEP-2003 (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (last) step.
    125
                                        121 HAGHPEVBGINGQYEKCTEGGGIYLVETPEDVRNIK--VNNPNDLAYVIQTELSMIDIKV 178
                                                                                             65
                                                                                                                                                                                                                                                                          al Similarity
195; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                      61
                                                                                                                                                                                                                            μ
                                                                                                                                                                                   ທ
                                                                                                                SDVPVGSYLIESAHGVSKEVQQEAEERQLTVPDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                              MQIVLANPRGFCAGVDRAIRIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
  HAGHPEVECIMGOYS -- SETGGMYLVETPADVEKLKAIVKDPSDLHYVSQTTLSVDETAD
                                                                                                                                                                              MKILLANPRGFCAGVDRAISIVERALELYQPPIYVRHEVVHNRFVVEGLKQRGAIFVEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EENIVÉEVÉKELR 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BEKVVFSIPKELK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GRTAFLIDDAADIQEAWVKEAACVGVTAGASAPDILVQNVIARLREFGGGEAVTLE--GR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DALREQFPSIKEQKKDDICYATQNRQDAVHBLAKISDLILVVGSPNSSNSNRLREIAVQL 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DALRKREPKIVGPRKDDICYATTNRQEAVRALAEQADVVLVVGSKNSSNSNRLAELAQRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HAGHPEVEGTMGQYS--NPEGGMYLVESPEDVWTLNVKNEGKLSFMTQTTLSVDDTSDVI
                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 42,
42,
                                                                                                                                                                                                                                                                     61.0%; Score 989.5; DB 1
61.9%; Pred. No. 4.5e-63;
tive 54; Mismatches 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Last
Last
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gammaproteobacteria; Vibrionales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sequence update) annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            321 AA
                                                                                                                                                                                                                                                                                                                DB 1;
```

Tagomori K.,

4-diphosphate

Length Indels

ن ا

Gaps

120 64

```
RESULT 6

ISPH VIBVU
ID ISPH V
AC QADETO
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT 15
     밁
                                                Ś
                                                                                                            片
                                                                                                                                                               Ś
                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ď
                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              멼
                                                                                                                                                                                                                                                                                                                             Query Match
Best Local S
Matches 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              _ISPH_VIBVU
Q8DETO;
                                                                                                                                                                                                                                                                                                                                                                                                                              TIGREAMS; TIGRO0216; ispH lytB; 1.
Isoprene biosynthesis; Complete proteome.
SEQUENCE 320 AA; 35575 MW; 09FB454ACDALEID8 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the Buropean Bioinformatics Institute. There are no rest
use by non-profit institutions as long as its content
modified and this statement is not removed. Usage by ar
entities requires a license agreement (See http://www.isb-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL; AE016798; AA009023.1; -. HAMAP; MF_00191; -; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Complete genome sequence of Vibrio vulnificus CMCP6.";
Submitted (DEC-2002) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bacteria; Proteobacteria;
Vibrionaceae; Vibrio.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IspH protein.
ISPH OR LYTB OR VV10504.
Vibrio vulnificus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro; IPR003451; Pfam; PF02401; LYTB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This SWISS-PROT entry is copyright. It is produced through a coerween the Swiss Institute of Bioinformatics and the EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (last) step.
-!- SIMILARITY: BELONGS TO THE ISPH FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -i- FUNCTION: Converts 1-hydroxy-2-methyi-2-(E)-butenyl 4-diphosphate
into isopentenyl diphosphate (IPP) and dimethylallyl diphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Choy H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -!- PATHWAY: Nonmevalonate terpenoid biosynthesis pathway;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Rhee J.H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN=CMCP6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15-SEP-2003
15-SEP-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    15-SEP-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    into isopentenyl diphosphate (IPP) (DMAPP) (By similarity).
                               121 HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLK--VNNENDLAYVTQFTLSMTDTKV
                                                                                                                                                                                                                                                                                                                             196;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           183 VIEELRRVPPDIQGPRKDDICYATQNRQDAVRELAGDVDVMVVVGSKNSSNSTRLKELAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     179
                                                                                                                                           61 SDVPVGSYLIFSAHGVSKEVQQEAEBRQLIVFDATCPLVTKVHMQVAKHAKQGRBVILIG
                                                                                                                                                                                                                      v
                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                 HEVPDDNIVIESAHGVSQAVRQEAXERALTVEDATCPLVTKVHMEVARASRXHMEVVLIG
HAGHPEVEGTMGQYASLQ--GGMYLVEKPEDVLGLKAIVKDPSNLHYVSQTTLSVDETAD
                                                                                                                                                                                                                                                  MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHARTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GREENMFFEVPKELQ 316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GIEEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KLGTPGYLTDCPEDIKPEWFEGKTKVGVTAGASAPEELVNQILERIKELVG-ARSVDEVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MVDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAV 238
                                                                                                                                                                                                                   MKILLANPRGFCAGVDRAISIVERALELYQPPIYVRHEVVHNRFVVEGLKQRGAIFVEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kim S.Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (Rel.
                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (Rel. 42, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           42, Last
42, Last
                                                                                                                                                                                                                                                                                                                                                      60.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LytB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chung S.S., Kim J.J., Moon Y.H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gammaproteobacteria; Vibrionales;
                                                                                                                                                                                                                                                                                                                             52;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sequence update) annotation updat
                                                                                                                                                                                                                                                                                                                       Score 989; DB
Pred. No. 4.8e
52; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              noved. Usage by and for commercial (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                      4.8e-63;
                                                                                                                                                                                                                                                                                                                                                                                DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                             61;
                                                                                                                                                                                                                                                                                                                                                                          Length 320;
                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     restrictions on
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Jeong
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a collaboration
MBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           seventh
                                                                                                                                                                                                                                                                                                                             6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ħ
                                                                                                                                                                                                                                                                                                                       Gaps
                                                      178
                                                                                                                                                                                                                   64
                                                                                                                                                               120
                                                                                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     298
                                                                                                            124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           242
                                                                                                                                                                                                                                                                                                                          ω
```

몽 Ś

Matches

195;

Conservative

56;

58;

Indels

9

Gaps

w

60 60 Similarity

Ś

61

SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG 120 MKILLANPRGFCAGVDRAISIVERALBLYQPPIYVRHEVVHNRFVVEGLKQRGARFVEEL MQIVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL

```
RESULT 9

IN PH VIBCH

ID TISPH V

AC Q9KU44

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 28-FEB

DT 15FH 0

OC Vibrio

OX NCBLT

RN MCDURN

RN HGLDON

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

CC -!- E

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    당
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                           Query Match
Best Local :
                                                                                                            HAMAP; MF_00191; -; 1.
InterPro; IPR003451; LytB.
Pfam; PP02401; LYTB; 1.
TIGRRAMs; TIGR00216; ispH_lytB; 1.
Isoprene biosynthesis; Complete pr
SEQUENCE 316 AA; 35156 MW; BB3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OHOLEGAE. ...
Nature 406:477-483(2000).
Nature 406:477-483(2000).
-i- FUNCTION: Converts 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate into isopentenyl diphosphate (IPP) and dimethylallyl diphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Dodson R.J., Haft D.H., Hickey E.K., Peterson J.D., Umayam L.A., Gill S.R., Nelson K.B., Read T.D., Tettelin H., Richardson D., Esten M.D., Vamathevan J., Bass S., Qin H., Dragoi I., Sellers P., McDonald L., Utterback T., Fleischmann R.D., Nierman W.C., White O., Salzberg S.L., Smith H.O., Colwell R.R., Mekalanos J.J., Venter J.C.,
                                                                                                                                                                                                                                                                                   EMBL; AB004154; AAF93850.1; ALT_INIT.
TIGR; VC0685; -.
                                                                                                                                                                                                                                                                                                                                                                       entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                              the European Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through a obtween the Swiss Institute of Bioinformatics and the EWBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAIN=El Tor N16961 / Serotype O1;
MEDLINE=20406833; PubMed=10952301;
Heidelberg J.F., Eisen J.A., Nelson W.C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q9KU44;
28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Vibrio cholerae.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            cholerae. *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Fraser C.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NCBI_TaxID=666;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bacteria; Proteobacteria;
Vibrionaceae; Vibrio,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ISPH_VIBCH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SPH protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA sequence of both chromosomes of the cholera pathogen Vibrio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (last) step.
SIMILARITY: BELONGS TO THE ISPH FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PATHWAY: Nonmevalonate terpenoid biosynthesis (last) step.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VIDELRRVFPEIQGPRKDDICYATQNRQDAVRELAKDVDVVVVVGSKNSSNSTRLKELAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MYDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVYGSPNSSNSNRLREIAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GREENMFFEVPKELQ 315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GIEEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KLGTPAYLTDCPQDIEPQWFDGKVKVGVTAGASAPEELVNQILTRIKELGAQ--SVEEVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (Rel. 41, (Rel. 41,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          41,
                              60.8%;
61.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Last
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sequence update)
Score 987; DB 1;
Pred. No. 6.6e-63;
66; Mismatches 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT:
                                                                                                               BB309DBA08CF679E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             316
                                                                                                                                                                                                                                                                                                                                                                                                   (See http://www.isb-sib.ch/announce,
                                                                                                                                                                                                                                                                                                                                                                                                                                                      There are no restrictions ng as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Clayton R.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                 Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Vibrionales;
                                                         Length 316;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             pathway; seventh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gwinn M.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                    for commercia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          엺
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    242
```

69;

Indels

<u>ب</u>

Gaps

316;

```
RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                                                                                            RC STRAIN—306 / ATCC 13902 / XV 101;

RM MEDLINE=2022145; pubMed=12024217;

RM MEDLINE=2022145; pubMed=12024217;

RA da Silva A.C.R., Ferro J.A., Reinach F.C., Farah C.S., Furlan L.R.,

RA da Silva A.C.R., Ferro J.A.M., Bertolini M.C., Camargo L.B.A.,

RA Quaggio R.B., Monteiro-Vitorello C.B., Van Sluys M.A., Almeida N.F.,

RA Alves L.M.C., do Amaral A.M., Bertolini M.C., Camargo L.B.A.,

RA Cicarelli R.M.B., Coutinho L.L., Clursino-Santos J.R., Eil-Dorry H.,

RA Cicarelli R.M.B., Coutinho L.L., Clursino-Santos J.R., Eil-Dorry H.,

RA Faria J.B., Ferreira A.J.S., Ferreira R.C.C., Ferro M.I.T.,

RA Formighieri E.F., Franco M.C., Greggio C.C., Gruber A.M.,

RA Formighieri E.F., Franco M.C., Greggio C.C., Gruber A.M.,

RA Katsuyama A.M., Kishi L.T., Lette R.P., Lemos E.G.M., Lemos M.V.F.,

RA Locali E.C., Meidanis J., Madeira A.M.B.N., Martinez-Rossi N.M.,

RA Martins B.C., Meidanis J., Menck C.F.M., Miyaki C.Y., Moon D.H.,

RA Moreira L.M., Novo M.T.M., Okura V.K., Oliveira M.C., Oliveira V.R.,

Pereira H.A., Rossi A., Sena J.A.D., Silva C., de Souza R.F.,

RA Spinola L.A.F., Takita M.A., Tamura R.E., Teixeira E.C., Tezza R.I.D.,

RA Trindade dos Santos M., Truffi D., Tsai S.M., White F.F.,

RA Setubal J.C., Kitajima J.P.;

RT Most specificities.",

Nature 417:459-463 (2002)

CC -1. FUNCTION. Converts 1-hydroxy-2-methyl-2-(B)-bytenyl 4-dimbornate

CC -1. FUNCTION. Converts 1-hydroxy-2-methyl-2-(B)-bytenyl 4-dimbornate

CC -1. FUNCTION. Converts 1-hydroxy-2-methyl-2-(B)-bytenyl 4-dimbornate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            28-FEB-2003
28-FEB-2003
28-FEB-2003
                                                                            This SWISS-PROT entry is copyright. It is produced through a collable between the Swiss Institute of Bioinformatics and the EMBL outset the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for comentities requires a license agreement (See http://www.isb-sib.ch/anor send an email to license@isb-sib.ch).
  EMBL; AE011755; AAM36128.1;
HAMAP; MF_00191; -; 1.
InterPro; IPR003451; LytB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q8PN17:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Xanthomonadaceae; Kanthomonas.
NCBI_TaxID=92829;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           xanthomonas axonopodis (p
Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ISPH protein.
ISPH OR LYTB OR XAC1256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                 (last) step.
SIMILARITY: BELONGS TO THE ISPH FAMILY.
                                                                                                                                                                                                                                                                      PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; seventh
                                                                                                                                                                                                                                                                                         FUNCTION: Converts 1-hydroxy-2-methyl-2-(E)-butenyl into isopentenyl diphosphate (IPP) and dimethylallyl (DMAPP) (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             XANAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GIBEKVVFSIPKELK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MVDALREQFPSIKEQKXDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLRBIAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNL--KVNNPNDLAYVTQTTLSMTDTKV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GREENMFFEVPKELO 311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QLGKPAYLIDTYQDLKQDWLEGIEVVGYTAGASAPEVLVQEVIDQLKAWGGETTSVRENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VIDELRRVFPKIQGPRKDDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HAGHPEVEGTMGQY--ASDTGGMYLVEXPEDVVSLQAKVKDPSNLHYVSQTTLSVDETAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KLGTPGYLIDCPQDIDPEWFVDAQLIGVTAGASAPEELVNQILDRIKELG--ATSVEEVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (Rel. 41, Created)
(Rel. 41, Last sequence update)
(Rel. 41, Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STANDARD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (pv. citri).
ia; Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ECYATONRÓDAVRILAEQVDVMVVVGSKNSSNSTRLKELAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        316 AA.
                                                                                                 (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Xanthomonadales;
                                                                                                                                                                                                                                                                                                                                4-diphosphate
                                                                                                                                                                                                                                                                                                           diphosphate
                                                                                                                                                                           collaboration -
                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
  RESULT
ISPH_XA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     유
        RC STRAIN—AATCC 3913 / NCPPB 528;
RC MEDINE—AATCC 3913 / NCPPB 528;
RR MEDINE—AATCC 3913 / NCPPB 528;
RR MEDINE—20022145; PubMed=12024217;
RA da Silva A.C.R., Ferro J.A., Reinach F.C., Farah C.S., Furlan L.R.,
RA da Silva A.C.R., Monteiro-Vitorello C.B., Van Sluys M.A., Almeida N.F.,
RA Alves L.M.C., do Amaral A.M., Bertolini M.C., Camargo L.E.A.,
RA Alves L.M.C., do Amaral A.M., Bertolini M.C., Camargo L.E.A.,
RA Cicarelli R.M.B., Coutinho L.L., Cursino-Santos J.R., El-Dorry H.,
RA Faria J.B., Ferreira A.J.S., Ferreira R.C.C., Ferro M.I.T.,
RA Formighieri E.F., Franco M.C., Greggio C.C., Gruber A.,
RA Formighieri E.F., Franco M.C., Greggio C.C., Gruber A.,
RA Katsuyama A.M., Kishi L.T., Leste R.P., Lemos B.G.M., Lemos M.V.F.,
RA Acoali E.C., Meidanis J., Menck C.F.M., Miyaki C.Y., Moon D.H.,
RA Moreira L.M., Novo M.T.M., Okura V.K., Oliveira M.C., Oliveira V.R.,
RA Moreira L.M., Novo M.T.M., Okura V.K., Oliveira M.C., Oliveira V.R.,
RA Pereira H.A., Rossi A., Sena J.A.D., Silva C., de Souza R.P.,
RA Spinnola L.A.F., Takita M.A., Tamura R.E., Teixeira E.C., Tezza R.I.D.,
RA Trindade dos Santos M., Truffi D., Tsai S.M., White F.F.,
RA Trindade dos Santos M., Truffi D., Tsai S.M., White F.F.,
RA Scubbal J.C., Kitajima J.P.;
"Comparison of the genomes of two Xanthomonas pathogens with differing host specificities.";
Nature 417:459-463(2002)
C. .. PATTWAY. Normexal Contest Stemenoid biogenthesis nathway. Seventh
C. .. DATTWAY. Normexal Contest Stemenoid biogenthesis nathway. Seventh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                品品
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S
Matches 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ISPH_XANCP STAN
QBPBG4;
28-FEB-2003 (Rel. 4
28-FEB-2003 (Rel. 4
28-FEB-2003 (Rel. 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Xanthomonas campestris (pv. campestris).
Bacteria; Proteobacteria; Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TIGRFAMS; TIGR00216; ispH_lytB; 1.
Isoprene biosynthesis; Complete pr
SEQUENCE 316 AA; 34690 MW; C93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ISPH OR LYTB OR XCC1157.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pfam; PF02401; LYTB; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                192;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PESMYFALPKELR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GVESYLIDNASEIDPAWIVGKQHIGLTAGASAPQVLVDGVLERLRELG--AAGVSELEGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVKNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BEKVVFSIPKELK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EALRARY PAMOGPRHDD:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HAGHPEVEGINGQWSRERGAGTIYLVEDIEQVATLDVRQPDNLAYTTQTTLSVDDTMGII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DEVPDDATVIPSAHGVSQAVRQEAERRGLKVFDATCPLVIKVHFEVARHCRAGRDVVLIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             . 41, Created)
. 41, Last sequence.
. 41, Last annotation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Xanthomonas.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sequence update) annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             50;
terpenoid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 980;
Pred. No. 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            e proteome.
C931226D6A53D4DA CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
biosynthesis pathway;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          316 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .1e-62;
```

Xanthomonadales;

pathogens with differing

...

240

180 180

```
RESULT
ISPHEN
ISPHEN
ID IS
AC P4
AC P4
DT 01
DT 01
DT 11
EGN IS
GN NG
RX NG
RX NG
RX MG
RX MG
RX MG
RX MG
RX MG
RX MG
RX MG
RX MG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX GG
RX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ŗ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ď,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TISPH HAEIN
P44976;
01-NOV-1995
01-NOV-1995
28-FEB-2003
SEQUENCE FROM N.A.

STRAIN-Rd / KW20 / ATCC 51907;

MEDLINE-95350630; PubMed-7542800;

MEDLINE-95350630; PubMed-7542800;

Fleischmann R.D., Adams M.D., White O., Clayton R.A., Kirkness E.F.,

Kerlavage A.R., Bult C.J., Tomb J.-F., Dougherty B.A., Merrick J.M.,

McKenney K., Sutton G., Fitzhugh M., Fields C.A., Gocayne J.D.,

Scott J.D., Shirley R., Liu L.-I., Glodek A., Kelley J.M.,

Weidman J.F., Phillips C.A., Spriggs T., Hedblom E., Cotton M.D.,

Weidman J.F., Phillips C.A., Spriggs T., Hedblom E., Cotton M.D.,

Fine L.D., Fritchman J.L., Fuhrmann J.L., Geoghagen N.S.M.,

Gnehm C.L., McDonald L.A., Small K.V., Fraser C.M., Smith H.O.,
                                                                                                                                                                                                                                                                                                                                                                                                                                   ISPH protein.
ISPH OR LYTB OR HI1007.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HABIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; AE012214; AAM40456.1; -.
HAMAP; MF_00191; -; 1.
InterPro; IPR003451; LytB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             This SWISS-PROT entry is copyright. It is produced through a collable between the Swiss Institute of Bioinformatics and the EMBL outer the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for commodified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                  Haemophilus influenzae.
Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TIGRFAMs; TIGR00216; ispH_lytB; Isoprene biosynthesis; Complete SEQUENCE 316 AA; 34641 MW; 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            entities requires a license agreement (S or send an email to license@isb-sib.ch)
                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=727;
                                                                                                                                                                                                                                                                                                                                                              Pasteurellaceae; Haemophilus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIMILARITY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               192;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PF02401; LYTB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            بر
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PESMVEALPKELR 311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EEKVVESIPKELK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GVESYLIUNASEIDPAWIVGKQHIGLTAGASAPQVLVDGVLARLRELG--ANGVSELAGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EALRVRYPAMQGPKHDDICYATQNRQDAVRDLARQCDLVLVVGSPNSSNSNRLSELARRD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DALREQFPSIKEQKKODICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HAGHPEVEGTMGQWSRERGPGQIYLVEDIEQVATLQVRQPESLAYTTQTTLSVDDTMGII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HAGHPEVEGIMGQYEKCIEGGGIYLVEIPEDVRNLKVNNPNDLAYVTQTILSMIDIKVMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DEVPDDATVIESAHGVSQAVRVBAERRGLKVFDATCPLVIKVHFEVARHCRAGRDVVLIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHWQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MDVLLANPRGFCAGVDRAIEIVKRAIETLGAPIYVRHEVVHNRFVVDDLKQRGAIFVEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BELONGS TO THE ISPH PAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         32, Created)
32, Last sequence up
41, Last annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            59.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            313
                                                                                                                                                                                                                                                                                                                                                                                  Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  48:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No. 1.16
3; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 970;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   e proteome.
6BF5A272A4CA1E4C CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            update:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1.1e-61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 1; Length
                                                                                                                                                                                                                                                                                                                                                                                  Pasteurellales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gh a collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60
```

IspH protein.
ISPH OR LYTB OR PM1664.
Pasteurella multocida.
Bacteria; Proteobacteria;

Last Last

annotation sequence update)

NCBI_TaxID=747; Pasteurellaceae;

Pasteurella.

Gammaproteobacteria;

Pasteurellales;

EQUENCE FROM N.A.

```
RESULT 13
ISPH PANNI
ID 18PH
AC P5796
DT 16-OC
DT 16-OC
DT 18PH
GN 18PH
GN 18PH
OS Paste
OC Paste
OC Paste
OX NCB1
RN [1]
RP SEQUE
RC STRAI
                                                                                                                                                                                                                                                                           멼
                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                    片
                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                              片
                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local S
Matches 184
                                                                                                                                                                                                               PASMU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro; IPR003451; LytB.
Pfam; PF02401; LYTB; 1
TIGRPAMs; TIGR00216; ispH_lytB; 1
Isoprene biosynthesis; Complete proteome.
SEQUENCE 314 AA; 34468 MW; 44860D110E9F9EBC
                                                                                                                                  16-OCT-2001 (Rel. 40,
16-OCT-2001 (Rel. 40,
28-FEB-2003 (Rel. 41,
                                                                                                                                                                  P57960;
16-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       the European Bioinformatics Institute. There are no restrictions with the property of the statement is sing modified and this statement is not removed. Usage by and for contentities requires a license agreement (See http://www.isb-sib.ch/aror send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL; U32781; AAC22668.1; -.
TIGR; HI1007; -.
THAMAP; MF 00191; -; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Science 269:496-512(1995)
                                                                                                                                                                                                 SPH_PASMU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "Whole-genome random sequencing and assembly of Haemophilus influenzae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SIMILARITY: BELONGS TO THE ISPH FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FUNCTION: Converts 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate into isopencenyl diphosphate (IPP) and dimethylallyl diphosphate (DMAPP) (By similarity).

PATHMAY: Nonmevalonate terpenoid biosynthesis pathway; seventh
                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                                                                                                                                                                    239
                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                179
                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              184;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ast) step.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                      EEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                             DALREGFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                            HXGHPEVEGIMGQYS--NEDGGIFLIEXVEDIARLEMQENDNLIFMTQTTLSLDDTAETI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SDVPVGSYLIFSAHGVSKEVQQEABBRQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MKIILANPRGFCAGVDRAISIVELALEIHGAPIYVRHEVVHNRFVVNGLRERGAIFVEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                           EGNMFFEVPKELR
                                                                                                                                                                                                                                                                                                                                    GVKSQLLDEPADIQADWFNDVKTIGITAGASAPBELGQSIISRLKRPG--ANSIEELQGL
                                                                                                                                                                                                                                                                                                                                                                GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                              AALKEKYPAIQGPHKNDICYATTNRQEAVRELAKLSDLVLVVGSKNSSNSNRLAELASRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEVPDGAIVIFSAHGVSQAVRQEAKDRNLKVFDATCPLVTKVHMQVARASRKGTKAILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                               STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         59.7%; Score 969; DB 1; 58.8%; Pred. No. 1.2e-61; tive 61; Mismatches 64
                                                                                                                                                                                                 314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CRC64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           314;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           for commercia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                            178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          180
                                                                                                                                                                                                                                                                                                                                      296
                                                                                                                                                                                                                                                                                                                                                                   300
                                                                                                                                                                                                                                                                                                                                                                                                238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60
```

```
REAL SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS SOCIOUS S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            유 상 유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local (
                                                                                                                                                                                                                       Q9JR39;
28-FEB-2003 (Rel. 41, Created)
28-FEB-2003 (Rel. 41, Last sequence
28-FEB-2003 (Rel. 41, Last annotati
1spH protein.
ISPH OR LYTE OR NMA0624 OR NMB1831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as last content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@sisb-sib.ch).
                                                                                                                               Neisseria meningitidis (serogroup A), and
Neisseria meningitidis (serogroup B)
Bacteria; Proteobacteria; Betaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                             MEIMA
  SEQUENCE FROM N.A.
STRAIN=Z2491 / Sel
                                                                               NCBI_TaxID=65699, 491;
                                                                                                             Neisseriaceae; Neisseria.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pfam; PF02401; LYTB; 1.
TIGRPAMS; TIGR00216; ispH_lytB; 1.
Isoprene biosynthesis; Complete proteome.
SEQUENCE 314 AA; 34469 MW; DCB6179787883125 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL; AE006203; AAK03748.1; --
HAMAP; MF_00191; -; 1
InterPro; IPR003451; LytB.
Pfam; PF02401; LYTB; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      May B.J., Zhang Q., Li L.L., Paustian M.L., Whittam T.S., Kapur V.;
"Complete genomic sequence of Pasteurella multocida Pm70.";
Proc. Natl. Acad. Sci. U.S.A. 98:3460-3465(2001).
-i- FUNCTION: Converts 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate
-into isopentenyl diphosphate (IPP) and dimethylallyl diphosphate
                                                                                                                                                                                                                                                                                                                                                                                             ISPH_NEIMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=21145866; PubMed=11248100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SIMILARITY: BELONGS TO THE ISPH FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (DMAPP) (By similarity).

PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; seventh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ast) step.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          <u>ب</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HEVPDGAIVIFSAHGVSQAVRQEAKNRNLKVFDATCPLVTKVHMQVARASRKGTKAILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EALKQKYPAIQGPRKNDECYATINRQQAVRELAQQSDLVIVVGSKNSSNSNRLAELASRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HEGHPEVEGTMGQYD--NPEGGIFLVESVEDIAKLGLRQEDDLTFMTQTTLSIDDTSEVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SDYPYGSYLIFSAHGVSKEYQQEAEBRQLTYFDATCPLYTKYHMQYAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MQIVLANPRGFCAGVDRAIBIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BENTVFEVPRELR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MKIILANPRGFCAGVDRAISIVESALEIHGSPIYVRHEVVHNRFVVNGLRERGAIFVEEL
                                                                                                                                                                                                                                                                            (Rel. 41, Created)
(Rel. 41, Last sequence update)
(Rel. 41, Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
Serogroup
                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               59.7%;
59.1%;
Þ
  _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 969; DB 1;
Pred. No. 1.2e-61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                             322
                                                                                                                                                                                                                                                                            update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 1; Length
                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5
                                                                                                                                          Neisseriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          60
```

```
문
                                                                                           Ş
                                                                                                                                                                 Ş
                                                                                                                                 밁
                                                                                                                                                                                                         맑
                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.

STRAIN-MC58 / Serogroup B;

MEDLINE=20175755; PubMed=10710307;

MEDLINE=20175755; PubMed=10710307;

Tettelin H., Saunders N.J., Heidelberg J., Jeffries A.C., Nelson Eisen J.A., Ketchum K.A., Hood D.W., Peders J.F., Dodson R.J., Melson W.C., Gwinn M.L., DeBoy R., Peterson J.D., Hickey E.K., Nelson W.C., Gwinn M.L., DeBoy R., Peterson J.D., Lickey E.K., Haft D.H., Salzberg S.L., White O., Fleischmann R.D., Dougherty E Mason T., Ciecko A., Parksey D.S., Blair E., Cittone H., Clark E. Cotton M.D., Utterback T.R., Khouri H., Qin H., Vamathevan J., Gill J., Scarlato V., Masignani V., Pizza M., Grandi G., Sun L., Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.;

"Complete genome sequence of Neisseria meningitidis serogroup B s
                                                                                                                                                                                                                                                                                                                                                                                                                                   HAMAP; MF_00191; -; 1.
InterPro; IPR003451; LytB.
Pfam; PF02401; LYTB; 1.
TIGRRAMs; TIGR00216; ispH_lytB; 1.
Isoprene biosynthesis; Complete proteome.
SEQUENCE 322 AA; 35322 MW; 6E92762C06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL; AL162753; CAB83914.1;
EMBL; AE002532; AAF42166.1;
PIR; D81038; D81038.
TIGR; NMB1831; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=2022556; PubMed=10761919;
Parkhill J., Achtman M., James K.D., Bentley S.D., Churcher C.,
Klee S.R., Morelli G., Basham D., Brown D., Chillingworth T.,
Davies R.M., Davis P., Devlin K., Feltwell T., Hamlin N., Holroyd
Jagels K., Leather S., Moule S., Mungall K., Quail M.A.,
Rajandream M.A., Rutherford K.M., Simmonds M., Skelton J.,
Whitehead S., Spratt B.G., Barrell B.G.;
"Complete DNA sequence of a serogroup A strain of Neisseria
meningitidis Z2491.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -!- PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; seventh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Science 287:1809-1815(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Nature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SIMILARITY: BELONGS TO THE ISPH FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FUNCTION: Converts 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate into isopentenyl diphosphate (IPP) and dimethylallyl diphosphate (DMAPP) (By similarity).
                   243
                                                         182
                                                                                           183
                                                                                                                                   126
                                                                                                                                                                       123
                                                                                                                                                                                                                                                                                                                                                           192;
                                                                                                                                                                                                           9
                                                                                                                                                                                                                                             63
                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          404:502-506(2000).
                                                                                                                                                                                                                                                                                                                                                                                 Similarity
PAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGIEE
                                                                                                                                                                                                                                                                                   IVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHBVVHNRTVVDGLKQKGAVFIBELSD
                                                                         LREQPPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLGK
                                                                                                                                                       GHPBVBGTMGQYEKCTEGGGIYLVETPEDVRNI.KVNNPNDLAXVTQTTLSMTDTKVMVDA
                                                                                                                                                                                                         VPPGATLVYSAHGVSKAVRQEAAERGFRVFDATCPLVTKVHKEVARLDAQDCEIIMIGHK
                                                                                                                                                                                                                               VPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTXVHMQVAKHAKQGREVILIGHA 122
                                                         LNARFPNIRNPHKEDICYATTNRQTAVKELAEQCDIVIVVGSPNSSNSNRLREVAASRGI
                                                                                                                                 GHVEVEGTMGQLAP----GKMLLVETVGDVAKLEVRNPDKLAYVSQTTLSVDETKDIIAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  step.
                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                             59.6%;
                                                                                                                                                                                                                                                                                                                                                           48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           . . ·
                                                                                                                                                                                                                                                                                                                                                           Pred. No. 1.5e-61;
8; Mismatches 66
                                                                                                                                                                                                                                                                                                                                                                                               Score 968;
                                                                                                                                                                                                                                                                                                                                                                                                                                       6E92762C0653D78F CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                 DB 1;
                                                                                                                                                                                                                                                                                                                                                           66; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Dougherty B
H., Clark E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nelson K.E.,
                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      B strain
                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ш
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ç
                                                                                                                                                                                                           125
                   302
                                                                                           242
                                                                                                                               181
                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                   59
```

```
RN [2]

RP SEQUENCE FROM N.A.

RP STRAIN=Temeculal / ATCC 700964;

RC STRAIN=Temeculal / Debmed=12533478;

RM Miyaki C.Y., Furlan L.R., Camargo L.E.A., da Silva A.C.R., Moon D.H.,

RA Miyaki C.Y., Furlan L.R., Camargo L.E.A., da Silva A.C.R., Moon D.H.,

RA Takita M.A., Lemos E.G.M., Machado M.A., Ferro M.I.T., da Silva F.R.,

Goldman M.H.S., Goldman G.H., Lemos M.V.F., El-Dorry H., Tsai S.M.,

RA Goldman M.H.S., Goldman G.H., Lemos M.V.F., El-Dorry H., Tsai S.M.,

RA Carrer H., Carraro D.M., de Oliveira R.C., Nunes L.R., Siqueira W.J.,

Coutinho L.L., Kimura S.T., Ferro E.S., Harakava R., Kuramae B.E.,

RA Marino C.L., Giglioti E., Abreu I.L., Alves L.M.C., do Amaral A.M.,

RA Baia G.S., Blanco S.R., Brito M.S., Cannavan F.S., Celestino A.V.,

RA Garna A.F., Fenille R.C., Ferro J.A., Formighieri E.F., Kishi L.T.,

RA Leoni S.G., Oliveira A.R., Rosa V.E. Jr., Sassaki F.T., Sena J.A.D.,

and G.S., Standard A.R., Rosa V.E. Jr., Sassaki F.T., Sena J.A.D.,

Simoson A.J.G., Almeida N.F. Jr., Setubal J.C.,
δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RA Simpson A.J.G., Reinach F.C., Arruda P., Abreu F.A., Acencio M., RA Alvarenga R., Alves L.M.C., Araya J.E., Baia G.S., Baptista C.S., RA Barros M.H., Bonaccorsi E.D., Bordin S., Bove J.M., Briones M.R.S., RA Barros M.H., Bonaccorsi E.D., Bordin S., Bove J.M., Briones M.R.S., RA Bueno M.R.P., Canargo A.A., Camargo L.E.A., Carraro D.M., Carrer H., RA Colauto N.B., Colombo C., Costa P.F., Costa M.C.R., Costa-Neto C.M., RA Colauto N.B., Cristofani M., Dias.Neto E., Olocena C., El-Dorry H., RA Fracincani A.P., Ferreira A.J.S., Ferreira V.C.A., Ferro J.M., Franca S.C., Franco M.C., Erohme M., Burlan L.R., RA Fraga J.S., Franca S.C., Franco M.C., Erohme M., Purlan L.R., RA Garnier M., Goldman G.H., Goldman M.H.S., Gomes S.L., Gruber A., RA Krieger J.E., Kuramae E.E., Laigret F., Lambais M.R., Leite L.C.C., RA Lemos E.G.M., Madeira A.M.B., Madeira H.M.F., Martino C.L., Martins E.M.F., Martino C.L., Martins E.M.F., Martino C.L., Martins E.M.F., Martino C.J., Monck C.F.M., Maleira A.M., Mascimento A.L.T.O., Monteiro-Vitorello C.B., RA Menck C.F.M., Martins E.A.L., Martins E.M.F., Matsukuma A.Y., RA Menck C.F.M., Nascimento A.L.T.O., Netto L.E.S., Monteira M.A., Nascimento A.L.T.O., Netto L.E.S., RA de Oliveira M.A., Nascimento A.L.T.O., Netto L.E.S., Pereira G.A.G., Pereira H.A. Jr., Peres A.G., G., Pereira H.A. Jr., Vaspasaki H.B., RA de Solva A.P., Terenzi M.F., Truffi D., Tsai S.M., Tsuhako M.H., RA Vallada H., Van Sluys M.A., Verjovski-Almeida S., Vettore A.L., RA Tsuhako M.H., Weidenis J., Setubal J.C., Ratz M.H., Weidenis J., Setubal J.C., Ratz M.H., Weidenis J., Setubal J.C., Ratz M.H., Weidenis J., Setubal J.C., Ratz M.H., Weidenis J., Setubal J.C., Ratz M.H., Weidenis J., Setubal J.C., Ratz M.H., Weidenis J., Setubal J.C., Ratz M.H., Weidenis J., Setubal J.C., Ratz M.H., Weidenis J., Setubal J.C., Ratz M.H., Weidenis J., Setubal J.C., Ratz M.H., Weidenis J., Setubal J.C., Ratz M.H., Weidenis J. Setubal J.C., 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ISPH Protein.
ISPH OR LYTB OR XF2416 OR PD1435.

Xylella fascidiosa, and

Xylella fascidiosa (strain Temecula1 / ATCC 700964).

Xylella fascidiosa (strain Temecula1 / ATCC 700964).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 XYLPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       28-FEB-2003
28-FEB-2003
  fastidiosa.";
                            "Comparative analyses of the complete genome sequences of Pierce's disease and citrus variegated chlorosis strains of Xylella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=20365717; PubMed=10910347;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Xanthomonadaceae; Xylella.
NCBI_TaxID=2371, 183190;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q9PAS9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             L5-SEP-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SPH_XYLFA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                anome sequence of 406:151-159(2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIVFVLPKELRR 311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KVVFSIPKELKK 314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DAYMVDNAGYLQRAWFEGKNKVGVTAGASAPEVLVREVLATIRGWGHET--VREGEGAEB 299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (Rel. 41, Created)
(Rel. 41, Last seq
(Rel. 42, Last ann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           41, Last sequence update)
42, Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
```

```
В
                                                           몽
                                                                                       Q
                                                                                                                       밁
                                                                                                                                                   Ś
                                                                                                                                                                                    몺
                                                                                                                                                                                                              S
                                                                                                                                                                                                                                               β.
                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                         よ
                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local S
Matches 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                J. Bacteriol. 185:1018-1026(2003).
-!- FUNCTION: Converts 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate
-!- and dimethylallyl diphosphate (IPP) and dimethylallyl diphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL; AE004050; AAF85215.1; -.
EMBL; AE012558; AA029279.1; -.
PIR; C82561; C82561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              the Buropean Bioinformatics Institute. There are no restrict use by non-profit institutions as long as its content is modified and this statement is not removed. Usage by and fo entities requires a license agreement (See http://www.isb-sib.or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PIR; C82561; C82561.

HAMAP; MF 00191; -; 1.

InterPro; IPR003451; LytB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TIGRFAMs;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pfam; PF02401; LYTB; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (last) step.
SIMILARITY: BELONGS TO THE ISPH FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      into isopentenyl diphosphate (IPP) and dimethylallyl diphospha (DMAPP) (By similarity).
PATHWAY: Nonmevalonate terpenoid biosynthesis pathway; seventh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SWISS-PROT entry is copyright. It is produced through a collaboration -
en the Swiss Institute of Bioinformatics and the EMBL outstation -
299
                            301
                                                           241
                                                                                         241
                                                                                                                        181
                                                                                                                                                      181
                                                                                                                                                                                      121
                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                          191;
                                                                                                                                                                                                                                                 6
                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                              ه...ز
                                                                                                                                                                                                                                                                                                                                              μ
                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                     ; TIGR00216; ispH_lytB;
biosynthesis; Complete
316 AA; 34704 MW; 1
                                                                            GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                         HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                 HQVPDGATVIFSAHGVSQAVRRQAAQRGLKVFDATCPLVTKVHLDVARHCRTGRDMILIG
                                                                                                                                                                                                                                                                   SDVPVGSYLIFSAHGVSKEVQQEAEBRQLTVFDATCPLVTXVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                              MKVLLANPRGFCAGVDRAIEIVKRTIDMLGTPIYVRHEVVHNRFVVDDLKQRGAIFVEEL
                                                                                                                                                                                                                                                                                                                                            MQIVLANPRGFCAGVDRAIBIVDQAIEAFGAFIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                             BEKVVFSIPKELK
                                                           GVASYLIDSAAEIDPAWVIDKHHIGVTAGASAPQVLVDGVLARLYELG--ATSVSEHSGK 298
                                                                                                                     DALRORF PTI QGPKNNDI CYATONRODAVRELARECDL VLVVGS PNSSNSNRLSELAQRE
                                                                                                                                                    DALREQFPSIKEOKKODICYATONRODAVHDLAKISDLILVVGSPNSSNSNRLREIAVQL
                                                                                                                                                                                      HAGHPEVEGTMGQWDQERGTGRIYLVENIDDVATLHVAQPHHLAYTTQTTLSVDDTRNII
                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                          59.6%; Score 967; DB 1; 61.0%; Pred. No. 1.7e-61;
                                                                                                                                                                                                                                                                                                                                                                            53;
                                                                                                                                                                                                                                                                                                                                                                                                                                     ; 1.
e proteome.
1A2E80B9A98D334A CRC64;
                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             There are no restrictions
                                                                                                                                                                                                                                                                                                                                                                             67;
                                                                                                                                                                                                                                                                                                                                                                                                         Length 316;
                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4-diphosphate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  for
                                                                                                                                                                                                                                                                                                                                                                             'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .ch/announce/
                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  commercia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                음
                                                                                                                                                                                                                     180
                                                                                            300
                                                                                                                                                         240
                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                  60
                                                                                                                            240
                                                                                                                                                                                       180
                                                                                                                                                                                                                                                                                    120
```

Search completed: January 29, 2004, 15:50:43
Job time: 6.98823 secs

```
Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
     Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                January 29, 2004, 15:44:14; Search time 23.7034 Seconds (without alignments) 3461.979 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                   Match
                                                                                                                                                                                                                                                                                                                                                                                                                                             Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              111110
1211
13::::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SPTREMBL 23:*
1: sp_archea:*
2: sp_bacteria:*
3: sp_fungi:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           830525 segs, 258052604 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MQIVLANPRGFCAGVDRAIE......GIEEKVVFSIPKELKKHMQA 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-941-947A-18
1623
     50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

50.0

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sp_mamma1:*
sp_mhc:*
sp_organelle:*
sp_phage:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sp_plant:*
sp_vrodent:*
sp_virus:*
sp_vertebrate:*
sp_vrolassified:*
sp_rvirus:*
sp_rvirus:*
sp_bacteriap:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sp_invertebrate:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sp_human:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sp_archeap:*
                                                                                                                                                                                                                                                                                                                                                                                                                 Length DB
                                                   16
16
  QBDETTO
QBEBITO
QBEDITO
QBDIZRI
QBDIZRI
QBF20PO
QBG20PO
QBG213
QBI295
QBI152
QBI152
QBI152
QBI152
QBI152
QBIX69
QBIX69
QBIX69
QBIX69
QBIX69
QBIX69
QBIX69
QBIX69
QBIX69
QBIX69
QBIX69
QBIX69
QBIX69
                                                                                                                                                                                                                                                                                                                                                                                                                      Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  830525
Q8det0 vibrio viln
Q8eb17 shewanella
Q8eb17 shewanella
Q8d2r2 viggleswort
Q8fqp0 corymebacte
Q8g257 bricella su
Q8g418 bifidobacte
Q8f313 leptospira
Q8i295 plasmodium
Q9bjx6 plasmodium
Q9bjx6 plasmodium
Q9bjx6 plasmodium
Q9bjx6 plasmodium
Q9bjx6 plasmodium
Q9bjx6 praemodium
Q8ri52 fusobacteri
Q8ewr9 mycoplasma
Q97i09 clostridium
Q8dk29 synechococc
Q9fsp0 adonis pala
Q94b35 arabidopsis
Q8kfn9 chlorobium
                                                                                                                                                                                                                                                                                                                                                                                                                   Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 1
QSDETO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ď
```

102.5 6.	102.5 6.	103 6.	103 6.	103 6.	103.5 6.	103.5 6.	103.5 6.	104 6.	104.5 6.	105.5 6.	107.5 6.	108 6.	108.5 6.	108.5 6.	109 6.	109 6.	110 6.	110 6.	111.5 6.	111.5 6.	112 6.	112.5 6.		150.5 9.	170 10.	170 10.	176.5 10.	230 14.
.3	.3 349		.3 582		.4 960	.4 545	.4 482	.4 488	.4 527	.5 960	.6 501	.7 886	.7 602	.7 596	.7 925		.8 542	-	.9 777		Ī	.9 434	.1 929		.5 223	•	Ī	.2 452
17	ы	9 1	v	16	11	16	15	16	16	11	ທ	16	16	16	S	16	Ŋ	16	16	N	16	16	16	10	10	10	10	10
103960	Q49598	Q8U9Z5	Q9U5E7	Q8X8F4	Q8CIE4	Q8CXL3	Q99F12	08CM07	Q98AG2	Q8BSZ1	061118	005560	Q8RBX6	Q97MA7	Q2275B	Q92EY8	QBKR20	Q8YA67	031489	P96626	Q8G4H3	Q9S5X9	086810	Q8LKH3	Q94ER4	Q94ER5	Q9SPL9	Q9SZ00
Q96y01 sulfolobus	Q49598 methanopyru	Q8u9z5 agrobacteri	Q9u517 paracentrot	Q8x8f4 escherichia					Q98ag2 rhizobium l	1	O61118 leishmania	O05560 mycobacteri	Q8rbx6 thermoanaer	Q97ma7 clostridium	Q22758 caenorhabdi	Q92ey8 listeria in	3	Q8ya67 listeria mo	O31489 bacillus su	P96626 bacillus su			O86810 streptomyce	Q81kh3 forsythia i	brassica r	G	Q9spl9 nicotiana t	0

ALIGNMENTS

밁	Ş	뭥	S	망	Ś	3 7 6	9	gs	Ş	2	20 3	70	Š	20	ñ	ŖΡ	æ	ĕ	8	8	SO	2	Ð	ŢΠ	DŢ	DT	ÃC	Ħ K
125 HAGHPEVEGTMGQYASIQGGWYLVEKPEDVLGLKAIVKDPSNLHYVSQTTLSVDBTAD 182	121 HAGHPEVEGTMGQYEXCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKV 178	65 HEVPDDNIVIFSAHGVSQAVRQEAKERALTVFDATCPLVTKVHMEVARASRKHMEVVLIG 124	61 SDVPVGSYLIFSAHGVSKEVQQBAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG 120	5 MKILLANPRGFCAGVDRAISIVERALELYQPPIYVRHEVVHNRFVVBGLKQRGAIFVEEL 64	LANPRGFCAGVDRAIBIVDQA	; Pred. No. 2.7e-66; Fred. No. 2.7e-66; Indels	ory Match		Complete proteome.	16798; AAO09023 1;	(DEC-2002) to the EMBL/GenBank/DDBJ d	"Complete genome sequence of Vibrio vulnificus CMCP6.";	臣. 氏.	Rhee J.H., Kim S.Y., Chung S.S., Kim J.J., Moon Y.H., Jeong H.,	940	SEQUENCE FROM N.A.				Bacteria; Proteobacteria; Gammaproteobacteria; Vibrionales;	Vibrio vulnificus.	VV10504.	Penicillin tolerance protein.	(TrEMBLrel. 23, Last annotation	(TrEMBLrel. 23,	01-MAR-2003 (TremBirel. 23, Created)	•	OSDETO PRELIMINARY: PRT: 320 AA.

```
RESULT
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OBERTA
OB
                     Ş
                                                                             밁
                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                맑
                                                                                                                                                                                                     문
                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                    문
                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                   片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local S
Matches 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE-2297686; PubMed=12368813; Medide E.J., Nelson W.C., Heidelberg J.F., Paulsen I.T., Nelson K.E., Gaidos E.J., Nelson W.C., Read T.D., Sisen J.A., Seshadri R., Ward N., Methe B., Clayton R.A., Meyer T., Tsapin A., Scott J., Beanan M., Brinkac L., Daugherty S., Meyer T., Tsapin A., Scott J., Beanan M., Brinkac L., Daugherty S., DeBoy R.T., Dodson R.J., Durkin A.S., Haft D.H., Kolonay J.F., Madupu R., Peterson J.D., Umayam L.A., White O., Wolf A.M., Vamathevan J., Weidman J., Impraim M., Lee K., Berry K., Lee C., Vamathevan J., Khouri H., Gill J., Utterback T.R., McDonald L.A., Wheller J., Xhouri H., Gill J., Utterback T.R., McDonald L.A., Feldblyum T.V., Smith H.O., Venter J.C., Nealson K.H., Fraser C.M.; "Genome sequence of the dissimilatory metal ion-reducing Dacterium Shewanella oneidensis.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-MAR-2003 (TrEMBLrel. 23, Created)
01-MAR-2003 (TrEMBLrel. 23, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation updat
Penicillin tolerance protein LytB.
LYTB OR S03529.
Shewanella oneidensis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bacteria; Proteobacteria; Gammaproteobacteria; Alteromonadales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q8EBI7;
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q8EBI7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Complete proteome. SEQUENCE 318 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=70863,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Biotechnol. 20:1118-1123(2002).; AE015789; AAN56520.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           179
                           301
                                                                                   248
                                                                                                                                          241
                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       al Similarity
188; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    803529;
                                                                                                                                                                                                                                                                                                                                                                                                                                         70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VIDSLRRVFFEIQGPRKDDICYATQNRQDAVRSLAKDVDVVVVVGSKNSSNSTRLKELAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MVDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAV
                                                                                                                                                                                                                                                                                                                                                      HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTKVMV 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SDVPVGSYLIFSAHGVSKEVQQEASERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MQIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GREENMFFEVPKELO 315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GIEEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENS
                        EEKVVFSIPKELK 313
                                                                                   GTOSÝLVDTADDIDSSWFENITKVAVTAGASAPEVLVOOVVOAIAKLA--PSVVTEVEGR
                                                                                                                                                                                                     SALLKRFPSIEGPRKDDICYATQNRQDAVRNLSADVDLLIVVGSKNSSNSNRLRELALKT
                                                                                                                                                                                                                                                         DAIREOFFSIKEOKKUDICYATONRODAVHDLAKISDLILVVGSPNSSNSNRLRBIAVOL 240
                                                                                                                                                                                                                                                                                                                                                                                                                                         DOVPDNNIVIFSAHGVSQAVRAEAKARGIRVFDATCPLVTKVHLQVTRASRKGIECILIG 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LNIMLANPRGPCAGVDRAISIVERALELFSPPIYVRHEVVHNRYVVQNLKDRGAVFVEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KLGTPAYLTDCPQDIEPQWFDGKVKVGVTAGASAPEELVNQILTRIKELGAQ--SVEEVL
                                                                                                                                          GKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                       HAGHPEVEGIMGQYD--NPNGGVYLIESPADVETLEVRDPNNLCFVTQTTLSVDDTLDII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       59.0%; Score 958; DB 16; llarity 60.1%; Pred. No. 5.7e-64; Conservative 50; Mismatches 71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      34718 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADCB10B6A3582E82 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 318;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                             300
                                                                                      305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       242
                                                                                                                                                                                                     247
                                                                                                                                                                                                                                                                                                                    187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 3
QBD2R2
ID QRD2R2
AC QBD2R2;
AC QBD2R2;
AC QBD2R2;
AC QBD2R2;
AC QBD2R2;
AC QBD2R2;
AC QBD2R2;
AC QBD2R2;
AC QBD2R2;
AC QBD2R2;
AC Wiggles
AC Wiggles
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC NCBL Texto
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI
AC MCBLINI

Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                움 &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             멼
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 162
                                                                                                                                                                                                                                                            01-MAR-2003
01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q8D2R2;
01-MAR-2003
01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                Q8FQP0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Akman L.,
Aksoy S.;
                                                                             Bacteria; Actinobacteria;
Corynebacterineae; Corynebacterineae; Corynebacterineae;
                                                                                                                                                                      Putative isoprenyl diphosp
CE1079.
Corynebacterium efficiens.
SEQUENCE FROM N.A. STRAIN=YS-314 / AJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE 315 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=164609;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LytB protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             306 KEDTVFAVPABLR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         162;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EEKVVFSIPKEL 312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IEKTKFMIPKKL 310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (TrEMBLrel. 23, (TrEMBLrel. 23, (TrEMBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY;
      12310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        35860 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             318
      _
```

```
flies, Wigglesworthia glossinidia.
Nat. Genet. 32:402-407(2002).
EMBL; AB063521; BAC24438.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
MEDLINE=22297718; PubMed=12219091;
Akman L., Yamashita A., Watanabe H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Wigglesworthia brevipalpis.
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Wigglesworthia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "Genome sequence of the endocellular obiigate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181 DALREOFFSIKEOKKODICYATONRODAVHDLAKISDLILVVGSFNSSNSNRLREIAVOL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121 HAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVANMENDLAYVTQTTLSMTDTKVMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61 SDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 MQIVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GKPAYLIDTYQDLKQDWLEGIBVVGVTAGASAÞEVLVQEVIDQLKAWGGETTSVRENSGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HXMHPEIIGTIGOYNNENK--KVFVIQSIEEICKLKIKDPNNLFYFTQTTLSVDDTNKII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDVPEKSILIFSAHGVSKSILKEANKRKLIIFDATCPLVSKVHHBIKRASKIRSEVIIIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                          GKKSYLIDTYKEIKKSWLNGVNNIGITAGASAPEILVQQVVNYLKIFYKNSVNIYQVDGD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FAIKKKYPYIIEPRKKDICYATENRQKSIKKIIKLVDIIFIIGSKNSSNSNRLFEIANKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MNIFLANPRGFCAGVDRAINIVKNAIEIYGPPIYVYNEVVHNKYVVNSLKKIGSIFVKKI
                                                                                                                                                             (TrEMBLrel. 23, Created)
(TrEMBLrel. 23, Last sequence update)
(TrEMBLrel. 23, Last annotation updat
(TrEMBLrel. 23, Last annotation updat
                                                                               Corynebacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     53.4%; Score 866; DB 16; 51.9%; Pred. No. 4.6e-57;
                                                                               Actinobacteridae; Actinomyce:
bacteriaceae; Corynebacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               72;
DSM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Last sequence update)
Last annotation update
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6552098712AA2884 CRC64;
44549 / JCM 11189;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Oshima
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                315
                                                                                                                                                                                                                                                                       336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                             n update)
s protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ×.
                                                                                                   Actinomycetales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   76;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          symbiont of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Shiba
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                 .HgzI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  H .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           315;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hattori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ξ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60
```

237

209

329 290 269 153 117

93

```
RESULT PRESULT OF RESULT O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                먌
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SABERBER
                            Query Match
Best Local S
Matches 154
                                                                                                                                                                                                                              P SEQUENCE FROM N.A.

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAIN=1330 / Biovar 1;

(C STRAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local S
Matches 153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-WAR-2003 (TYEMHITE1. 23, Created)
01-WAR-2003 (TYEMHITE1. 23, Last sequence update)
01-WAR-2003 (TYEMHITE1. 23, Last annotation update)
Penicillin tolerance protein LytB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q8G257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q8G257;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "The entire genomic sequence of Corynebacterium efficiens Submitted (MAY-2002) to the EMBL/GenBank/DDBJ databases. SMBL; AP005217; BAC17889.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NCBI_TaxID=29461;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Brucellaceae; Brucella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Brucella suis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LYTH OR BR0475.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 keo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Kawarabayasi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            rabayasi Y., Yamaz
K., Suzuki M., Ma
Y., Sugimoto S.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           146
                                                                                                                                                                                                                 BR0475; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N
                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                     proteome.
372 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTAAEKIVFALPRVLR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SGIEEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QAGAKNAYLVDYAHQIDEAWLDGVQTIGISSGASVPEILVTGVLERLAGYGFD--DVEEV 317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OLG-KPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVREN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IVRELKKYYPQLQDPPSDDICYATQNRQVAVKAIAERCOLMIVVGSTNSSNSVRLVEVAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MVDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EGHEEVEGTMGHSLDRT-----HLVDGIESIPGLPAFLADEPN-LIWLSQTTLSVDETME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGHPEVEGIMGQYEKCTEGGGIYLVETPEDVRNLK---VNNPNDLAYVTQTTLSMTDTKV 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EAPEGAHMVFSAHGVSPAVKEEAAAKNLQAIDAACPLVTKVHNEVKRFDKQGFHILFIGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DVPVGSYLIFSAHGVSKEVQQRARERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGH 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KILLAAPRGYCAGUDRAVETYERALEEYGAPIYVRKEIVHNRYVVDTLAEKGVIFVEEAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 336 AA;
                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Yamazaki J., Hino Y., Kikuchi H., Nakamura Y
Mashima J., Itoh T., Yamagishi A., Nishio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        47.18;
                                                                                                                                                     40930
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              36430 MW; C47E456FEEB82AC7
                                                            46.38;
                                                                                                                                                     MW,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Alphaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
S
S
                                  59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        68; Mismatches
                                                            Score 751;
Pred. No. 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 764; DB 16;
Pred. No. 2.3e-49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRT;
                                                                                                                                                     365B990651BCC9BC
                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     372 AA
                                                         DB 16;
2.6e-48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Eisen J.A., Heidelberg J.F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     83;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Rhizobiales;
                                                                                                                                                        CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CRC64;
                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 336;
                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                        372:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   YS-314.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        12;
                               22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ) K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                         M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                            5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        'n
                                                                                                                  밁
                                                                                                                                                                                                                                                                                       á
몽
                                         Ş
                                                                                                                                                                        S
                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT
Q8G4L8
                                                                                                                                                                                                                                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SON BELLEVE SERVE OF OUR BELLEVE OUR BELLEVE OF OUR BELLEVE OF OUR BELLEVE OF OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR BELLEVE OUR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       뭉
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         믕
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Complete proteome. SEQUENCE 352 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=22294977; PubMed=12381787; Schell M.A., Karmirantzou M., Snel Pessi G., Zwahlen M.-C., Desiere F. Pridmore R.D., Arigoni F.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-MAR-2003 (TEMMBLrel. 23, Last sequence update) 01-MAR-2003 (TEMMBLrel. 23, Last annotation update) 15HH protein involved in conversion of 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate into
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; AE014766; AAN25161.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       to the human gastrointestinal tract.";
Proc. Natl. Acad. Sci. U.S.A. 99:14422-14427(2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A. STRAIN=NCC 2705;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bifidobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bifidobacterium longum.
Bacteria; Actinobacteridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=216816;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q8G4L8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q8G4L8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ISPH OR BL1361.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                genome sequence of Bifidobacterium longum
                                                         167
                                                                                                                  147
                                                                                                                                                                              107
202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              118
                                                                                                                                                                                                                                          87
                                                                                                                                                                                                                                                                                                52
                                                                                                                                                                                                                                                                                                                                                             27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  145;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            34
                                                                                                                                                                                                                                                                                                                                                                                                                   ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                 AKHAKQGREVILIGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYV
                                                                                                                                                                                                                                                                                                                                                      SQTTLSVDETADTIAALKAKFPWIQEPPSSDICYATSNRQAAVKLVAQQSDCVVIVGSAN
                                                                                                                                                                                                                                                                                                KGAVFIEELSDVP-----VGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQV
                                                                                                                                                                                                                                                                                                                                                                                                IVLANPRGFCAGVDRAI---EIVDQAIEAFG------APIYVRHEVVHNRTVVDGLKQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TOTTLSMTDTKVMVDALREOFFSIKEOKKDDICYATONRODAVHDLAKISDLILVVGSPN
                                                                                                                     LREVREG
                                                                                                                                                                                                                                       QGAVFVQELAET PDAAAQAĞI PVVFSAHGVS PVVKAEAERRGMHVVDATCPLVGKVHREV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VQLG-KPAYLIDTYQDLKQDWLBGIBVVGVTAGASAPEVLVQEVIDQLKAWG------GE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GIIKELQARF PNLAAPAAESI CYATTNRQDAVRAAAPGCDLFLI VGAPNSSNSKRLVEVA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VMVDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKISDLILVVGSPNSSNSNRLREIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LIGHSGHPEVIGTMGQ----LPDGAVTLIETVEDAHTCHFDDEDNLGFVTQTTLSVDDTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LIGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMTDTK 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EKAGARMSMLVQRAEDIEWEQIGDISVVGLSAGASAPEIIVDBIIDAFKAHPDVKIELAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DBIPAAHRNQPVVFSAHGVPKSVPADAEAKNLFYLDATCPLVSKVHKQAMRHQRLGRHVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SDVPV----GSYLIFSAHGVSKKVQQEABERQLTVFDATCPLVTKVHMQVAKHAKQGREVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTVETEN----FLVNRBIR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTSVRENSGIEEKVVFSIPKELK 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     37863 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bifidobacterium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            40.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   23, Created)
23, Last sequence update)
23, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 658; DB
Pred. No. 2.3e
54; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     984B6BF80286D136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ή
;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B., Vilanova D., I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2.3e-41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AA
```

Bifidobacteriales;

IPP

96;

26;

Gaps

166

106 96

226 201 CRC64;

Length 352; Indels

reflects

Berger y M.,

. B

```
RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
ID RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                             문
                                                                                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                                                                                    문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
Matches 136
                                                                                                                                                                                                                                    Q81295;
Q81295;
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q8F3I3;
Q8F3I3;
01-MAR-2003
01-MAR-2003
    MEDLINE=22255708; PubMed=12368867; Hall N., Pain A., Berriman M., Chu Mungall K., Bowman S., Atkin R., B
                                                                                               Plasmodium faîciparum
Eukaryota; Alveolata;
NCBI_TaxID=36329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Submitted (MAR-2002) to the EMBL; AE011409; AAN49619.1;
                                                                 SEQUENCE FROM N.A.
                                                                                                                                                               LYTB.
                                                                                                                                                                                                   01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Submitted (MAR-2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ren
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRAIN=56601 /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LYTH OR LA2420.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-MAR-2003 (TrEMBLre
Penicillin tolerance
                                                                                                                                                                                 LytB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Complete proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Leptospira interrogans.
Bacteria; Spirochaetes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NCBI_TaxID=173;
                                                                                                                                                                                                                                                                                                                  œ
                                                                                                                                                                             protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  141
                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                                                                                                                                                    194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  136;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KIYLANPRGPCAGVKYAISYVEQVQANSEEQIYVRKEIVHNRRVVEDMKKNGIRFINDLD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QIVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBBLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGHPEVEGTMGQYBKCTEGGGIYLVETPEDVRNLKVN-NPN-DLAYVTQTTLSMTDTKVM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LKAWGGETTSVRENSGIEEKVVFSIPKELKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SSNSVRIMEVAQEGIGERGKAYRVDDASELDPAWFEGLESVGISSGASVPDELVSGVIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SSMSNRLREIAVQ-LGK--PAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQ
                                                                                                                                                                                                                                                                                                                                                                           KSKPHSFKVSTADDLSKEYIQNNEIKILGLTAGASTPQVLVDEIISKLK 301
                                                                                                                                                                                                                                                                                                                                                                                                             LGKP-AYLIDTYQDLKQDWLEG--IEVVGVTAGASAPEVLVQEVIDQLK 285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EGHDEAIGTMGEAE-----MFLVESLEDIISLKDKIDPNKPLTYLMQTTLSVADTKNI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LONLG - - FTGMKSVETTKENMHFVLPAELRR
                                                                                                                                                                                                 (TrEMBLrel.) (TrEMBLrel.) (TrEMBLrel.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              330 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (TrEMBLiel.
(TrEMBLiel.
(TrEMBLiel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                           PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Serogroup
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           36940 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                38.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein
                                                                                                                      (isolate 3D7).
Apicomplexa; Haemosporida;
                                                                                                                                                                                                 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Spirochaetales; Leptospiraceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Icterohaemorrhagiae /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                57;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 628; DB
Pred. No. 3.8e
57; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Last
                                                                                                                                                                                               Last sequence update)
                                                                                                                                                                                                                                        Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Last
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRT;
                    Churcher C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5D7642CD6AE3F86E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                annotation
          Baker
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sequence update)
                                                                                                                                                                                                                                                                             535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            330
        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 16;
.8e-39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ã
                                                                                                                                                                                                                                                                           8
          Barron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              update)
                    Harris B.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Serovar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CRC64;
                                                                                                                        Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 330;
        ?
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
        Brooks K.,
                          Harris
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Leptospira.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                14;
                      0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        283
                                                                                                                                                                                                                                                                                                                                                                                                                                                      252
```

Ļ,

```
DR RESULT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF THE BOX REPORT OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ঠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RAPARA RA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Buckee C.O., Burrows C., Cherevach I., Chillingworth C.,
A Chillingworth T., Christodoulou Z., Clark L., Clark R., Corton C.,
A Cronin A., Davies R., Davis P., Dear P., Dearden F., Doggett J.,
A Feltwell T., Goble A., Goodhead I., Gwilliam R., Hamlin N., Hance
A Hamper D., Hauser H., Hornsby T., Holroyd S., Horrocks P.,
A Humphray S., Jagels K., James K.D., Johnson D., Kerhornou A.,
A Knights A., Konforttov B., Kyes S., Larke N., Lawson D., Lennard N.
A Knights A., Konforttov B., Kyes S., Larke N., Lawson D., Lennard N.
A Line A., Maddison M., Mclean J., Mooney P., Moule S., Murphy L.,
A Cliver K., Ormond D., Price C., Quail M.A., Rabbinowitsch E.,
A Oliver K., Ormond D., Price C., Quail M.A., Rabbinowitsch E.,
A Rajandream M.A., Rutter S., Rutherford K.M., Sanders M., Simmonds i
Seeger K., Sharp S., Smith R., Squares R., Squares S., Stevens K.,
A Sulston J.B., Craig A., Newbold C., Barrell B.G;
Sequence of Plasmodium falciparum chromosomes 1, 3-9 and 13.*;
PMBL. 21031745. CP143005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q9BJX6;
01-JUN-2001
01-JUN-2001
01-MAR-2003
InterPro; IPR003451; LytB.
InterPro; IPR002052; N6 Mtase.
Pfam; PF02401; LYTB; 1.
TIGREAMS; TIGR00216; ispH lytB;
PROSITE; PS00092; N6 MTASE; 1.
                                                                                                                                                                     Beck E., Jomaa H.;

"GCPE Is Involved in the 2-C-Methyl-D-Erythritol 4-Phosphate of Isoprenoid Biosynthesis in Escherichia coli.";

J. Bacteriol. 183:2411-2416(2001).

BMBL; AF323927; AAKLZ102.1;

BMBL; AF323927; AAKLZ102.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Plasmodium falciparum.
Eukaryota; Alveolata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ОЗВТХ6
                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=21172855; PubMed=11274098;
Altincicek B., Kollas A.K., Sanderbrand
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NCBI_TaxID=5833;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AL031745; CAD49005.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMFDTKVMVDA 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGHA 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VPKWKT-PKNE-LHM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NHVEVIGTYNEAPHCT-----HIVENVNDVDKLNFPENKKLFYVFQTTLSMDDCALIVQK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VPDGHILIYSÄHGISPQIREIÄKKKKLIEIDATCPLVNKVHVYVQMKAKENYDIILIGYK 341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KVVFSIPKBLKKHM 316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PAVILINTVHDLDQQILKNVNKIALTSAASTPEQETQKFVNLLTNPPFNYTLQNFDGAHEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLKAWGGETTSVRENSGIEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LKNKFPHIETIPSGSICYATTNRQTALNKICTKCDLTIVVGSSSSSNAKKLVYSSQIRNV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LREQFPS KEOKKODICYATONRODAVHDLAKISDLILVVGSPNSSNSNRLREIAVOLGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBBLSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (TrEMBLrel. 17, (TrEMBLrel. 17, (TrEMBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             535 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          36.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62470 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Apicomplexa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             529
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;
83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 599; DB 5;
Pred. No. 1.1e-36;
8; Mismatches 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             E7CB6FCCD22FA07E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Haemosporida; Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               535
                                                                                                                                                                                                                                                                                                                                                                                               s
;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120;
                                                                                                                                                                                                                                                                                                                                                                                               Wiesner
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                               ٠
;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Doggett J.,
lin N., Hance
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gagett J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Lennard N.,
                                                                                                                                                                                                                                                                                                                                                                                               Hintz
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Simmonds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                         Pathway
                                                                                                                                                                                                                                                                                                                                                                                               ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .
C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                281
```

Ŋ

```
RESULT
QBRI52
                                            В
                                                                                                                                                              Ś
                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                     Query Match
Best Local S
Matches 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches 123;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                    EMBL; ABO10480; AAL93880.1; -.
InterPro; IPR003451; LytB.
InterPro; IPR003029; S1.
Pfam; PF02401; LYTB; 1.
Pfam; PF00575; S1; 4.
SMART; SM00316; S1; 6.
TIGREAMS; TIGR00216; 1spH_lytB; 1.
PROSITE; PS50126; S1; 4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bacteria; Fusobacteria;
Fusobacterium.
NCBI Tavro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q8R152;
01-JUN-2002 (TrEMBLrel
01-JUN-2002 (TrEMBLrel
01-MAR-2003 (TrEMBLrel
                                                                                                                                                              Complete
SEQUENCE
                                                                                                                                                                                                                                                                                                     STRAIN=ATCC 25586;

MEDLINS=21886394; PubMed=11889109;

Kapatral V. Anderson I., Ivanova N., Reznik G., Los T., Lykidis F.

Bhattacharyya A., Bartman A., Gardner W., Grechkin G., Zhu L.,

Vasieva O., Chu L., Kogan Y., Chaga O., Goltsman E., Bernal A.,

Larsen N., D'Souza M., Walunas T., Pusch G., Haselkorn R.,

"Genome sequence and analysis of the oral bacterium Fusobacterium nucleatum strain ATCC 25586";

J. Bacteriol. 184:2005-2018 (2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q8RI52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=76856;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                  9
                                             ш
                                                                          щ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3 IVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIERISD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                   Similarity
                                                                                                                                                          proteome.
B27 AA;
----LSDVPVGSYLIFSAHGVSKEVQQBAEERQLTVFDATCPLVTKVHMQVAKHAKQGR 114
                                            METIRAKHMGFCFGVLBAINVCNSLVEEKGRK-YILGMLVHNKQVVEDMERKGFKLVTED 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GHPEVEGTNGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSHTDTKVMVDA 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VPVGSYLIFSAHGVSKEVQQEAEBRQLTVFDATCPLVTKVHMQVAKHAKQGREVILIGHA 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LYLINPRGFCKGVSRAIETVEECLKLFKPPIYVKHKIVHNDIVCKKLEKBGAIFIEDLND
                                                                        MQIVLANPRGFCAGVDRAIBIVDQAIBAFGAPIYVRHEVVHNRTVVDGLKQKGAVFIBB-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PAVLLNTVHDLDQQILKNVNKIALTSAASTPEQETQKFVNLL 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PAYLIDTYODLKODWLEGIEVVGVTAGASAPEVLVQEVIDOL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LREQFPSIKEQKKDDICYATONRODAVHDLAKISDLILVVGSPNSSNSNRLREIAVQLGK 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NHVEVIGTYNEAPHCT----HIVENVNDVDKLNFPLNKKLFYVTQTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VPDGHILIYSAHGISPQIREIAKKKKLIBIDATCPLVNKVHVYVQMKAKENYDIILIGYK 341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LKNKFPHIETIPSGSÍCYATTNRÓTALNKICTKCDLTIVVGSSSSSNAKKLVYSSQIRNV 456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AA.
                                                                                                                                                              94507 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62504 MW;
                                                                                                  24.9%; Score 404.5; DB 16; Length 30.7%; Pred. No. 8.9e-22; tive 68; Mismatches 119; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           36.9%; Score 598.5;
43.6%; Pred. No. 1.3e
tive 55; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2 2 2 2
2 2 2 2
2 3 5 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (subsp. nucleatum).
Fusobacterales; Fusobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Created)
                                                                                                                                                              23B71DCED082A35E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     E7C6CDCCD22FA07E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              827
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1.3e-36;
ches 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Þ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 535;
                                                                                                                                                                                                                                                                                                                                                                                                           Lykidis A.,
                                                                                                    45;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ś
                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                        59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   281
                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                      B
                                                                                                             Ś
                                                                                                                                             망
                                                                                                                                                                        Ś
                                                                                                                                                                                                     퉗
                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                             ₽
                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  먌
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         よ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local S
Matches 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sasaki Y., Ishikawa J., Yamashita A., Oshima K., Kenri Yoshino C., Horino A., Shiba T., Sasaki T., Hattori M.; Yoshino C., Horino A., Shiba T., Sasaki T., Hattori M.; "The complete genomic sequence of Mycoplasma penetrans, intracellular bacterial pathogen in humans."; Nucleic Acids Res. 30:5293-5300(2002).

EMBL; AP004170; BAC43925.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mycoplasma penetrans.
Bacteria; Firmicutes;
NCBI TaxID=28227;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QSEWR9;
                                                                                                                                                                                                                                                                                                                                                                                                                                    Complete proteome.
SEQUENCE 299 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=22354719; PubMed=12466555;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN=HF-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MYPE1330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LytB protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q8EWR9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        <u>н</u>
ы
                               280
                                                           274
                                                                                      220
                                                                                                                 214
                                                                                                                                                162
                                                                                                                                                                          154
                                                                                                                                                                                                       108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         223
                                                                                                                                                                                                                                94
                                                                                                                                                                                                                                                               51
                                                                                                                                                                                                                                                                                          50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                            93;
                                                                                                                                                                                                                                                                                                                                                  _
                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                               TWLANYVI
                                                         EVIVQEVI
                                                                                      SEVDILL VVGDIKSNNSKKLVEIGIKKQIESHLIWNTKNIKDEWFINKKCLAITSGCSTP
                                                                                                                                             NIRTESEKPIFVINQTTISIYEFEEITETLKSKYKNI--EFKNDICNAAKDRQDAVINMP
                                                                                                                                                              NLKVNNPNDEAYVTQTTLSMTDTKVMVDALREQFPSIKEQKKDDICYATQNRQDAVHDLA
                                                                                                                                                                                                     TTCIYVTKTHDLIKEKIBQGYQIFYIGVNNHPETISTL-SIDK-----SIILIETVNDIE
                                                                                                                                                                                                                            ATCPLVTKVHMQVAKHAKQGREVILIGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVR 153
                                                                                                                                                                                                                                                             EELGIQTKDDKNHSRSEIIDSIEIKDKNNPPI---VIFSAHGTDQKTIDKAREKGLVVFD
                                                                                                                                                                                                                                                                                          KOKG----
                                                                                                                                                                                                                                                                                                                    MKIKITERGECKGV------VDAYATCKKIAKLYPNHEKYLIGWLVHNKEIIKEL
                                                                                                                                                                                                                                                                                                                                                 MQIVLANPRGFCAGVDRAIBIVDQAIBAFG----APIYVRHE-----VVHNRTVVDGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NSSNSNRLREIAVQLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAPEVLVQEVIDQLK 285
                                                                                                                KISDLILVVGSPNSSNSNRLREIAVQLGKPAYLIDTYQDLKQDWLEGIEVVGVTAGASAP 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AWG-GETTSVRENSG----IEEKVVFSIPKELKK 314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KSSNTKKLYBISKKLNDNSYLVENEEQLDLSIFRGKEVVGITAGASTPEETIMNI--EKK 280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SILFMGDKNHPEVKGVI-----SFADDİQIFESFEEAKKLKIDLDKTYLLSTQTTLN-- 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VRGIYKMSNVNENQNEFSLMLEE----FLPNQEKR 311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DTKVMVDALREQFPSIKEQKK-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -----KKKFEEIKKYFKENYKNVVIFDKÍCGÁTAVRÓKÁVEDLÁVKVEVMIIVGDT 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EVILIGHAGHPEVEGIMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVTQTTLSMT 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ELLNDMDELKEDDIVVIRAHGTSKSVHEKLKERKVKVFDATCIFVNKIRQEIBIANENGY 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (TrEMBLiel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRELIMINARY;
                               287
                                                           281
                                                                                                                                                                                                                                                                                                                                                                                                                                      34190 MW; CFF14C65FB55F9EF CRC64;
                                                                                                                                                                                                                                                                                                                                                                                        24.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mollicutes; Mycoplasmataceae; Mycoplasma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 23,
                                                                                                                                                                                                                                                                                         ----AVFIEELSDVPVGSYLIFSAHGVSKEVQQEABERQLTVFD
                                                                                                                                                                                                                                                                                                                                                                            68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Created)
Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                            Score 393; DB 16;
Pred. No. 1.5e-21;
B; Mismatches 99;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -DDICYATONRODAVHDLAKISDLILVVGSP 225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   update)
                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kenri T.,
                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                            48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Furuya
```

Χ.

161

107 93 50 49 8

219 213

```
RESULT 12
Q9710
AC Q9710
AC Q9710
AC Q9710
DT 01-OC
DT 01-M
DE Prosic
CAC1
OS CAC1
OC CAC1
OC CAC1
OC CAC1
OC CAC1
OC CAC1
OC CAC1
OC STR
RN [1]
RP SEQ
RC STR
RX MEI
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G11
RA G1
RA G11
RA G1
RESULT 13
Q8DK29
ID Q8DK2
AC Q8DK2
DT 01-MA
DT 01-MA
                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                 용
                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              멂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RA Noelling J., Breton G., Comelchenko M.V., Makarova K.S., Zeng Q.,
RA Gibson R., Lee H.M., Dubois J., Qiu D., Hitti J., Wolf Y.I.,
RA Tatusov R.L., Sabathe F., Doucette-Stamm L., Soucaille P., Daly M.J.,
RA Bennett G.N., Koonin E.V., Smith D.R.;
RT "Genome sequence and comparative analysis of the solvent-producing
RT Jacteriol. 193:4823-4838(2001)
RJ Bacteriol. 193:4823-4838(2001)
RL J. Bacteriol. 193:4823-4838(2001)
R EMBL; AB007693, AAK79811.1; -.
DR InterPro; IPR000110; Ribosomal_S1.
InterPro; IPR003029; S1.
DR InterPro; IPR003029; S1.
DR Ffam; PF007401; LYTB; 1.
DR Pfam; PF00751; S1; 3.
DR PF1MTS; PR00681; RIBOSOMALS1.
DR SMART; SM00316; S1; 4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local S
Matches 90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q97109
Q97109;
01-OCT-2001 (TEMBI
01-OCT-2001 (TEMBI
01-MAR-2003 (TEMBI
Fusion penicillin t
Q8DK29;
Q8DK29;
01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein (C-terminus).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TIGRFAMS; FIGR00216; ispi
PROSITE; PS50126; S1; 3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
STRAIN=ATCC 824 / DSM 792 / VKM B-1787;
MEDLINE=21359325; PubMed=11466286;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Clostridium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Clostridium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NCBI_TaxID=1488;
                                                                                                                                                                                            294
                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                      176
                                                                                                                                                                                                                                                                                                                                                                                                                                       180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               <del>;</del> 06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                proteome.
                                                                                                                                                                                                                                                                                                                                                                                    LKEVKNR -- AIEVISFNTICNATSERQKIAKDLSNKVDFMVVIGGKQSSNTTKLYBICKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GDKYHPEVIGINGWCD-----NKAIISKQGENLEN--ITSESKVCIVSQTTEKLENWEKV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LSDVPVGSYLIFSAHGVSKEVQQEAEERQLFVFDATCPLVTKVHMQVAKHAKQGREVILI 119
                                                                                                                                                                                            DAMKFIAENEGKIYVGASVTGEIIQVSEKEVF 325
                                                                                                                                                                                                                                             ----VRENSG-
                                                                                                                                                                                                                                                                                        NCNETIHVENSGEIPENILKNKNCVIGVTÄGÄSTPDWIIEEAISKKSENQISNETNNEMA
                                                                                                                                                                                                                                                                                                                                 LGKPAYLIDTYQDLKQDWLBGIE-VVGVTAGASAPEVLVQEVIDQL--KAWGGETTS---
                                                                                                                                                                                                                                                                                                                                                                                                                                 VDALREQFPS I KEQKKODI CYATQNRQDAVHDLAKI SDLILVVGSPNSSNSNRLREI AVQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CHACHPEVECIMCQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYVIQITLSMIDIKVM 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IDNLKENDVILIRSHGISEEIYKILLSKGLTVINATCPFVTKIQEKVKKYNELGYDIVIV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KVMLAEKAGFCFGVKRAVDMALLTQKEYNKKIYTLGELIHNNDVVDKLKDNNVYPIGIED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QIVLANPRGFCAGVDRAIEIVDQAIEAFGAPIYVRHEVVHNRTVVDGLKQKGA--VFIEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         642 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                acetobutylicum.
irmicutes; Clostridia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (TrEMBLrel.
  (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                         PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (TrawaLre)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 tolerance
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         71988 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    22.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ispH_lytB;
  23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        18,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          77;
     Last
                    Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Last
LytB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 358;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A8833AA24420EDBD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
  sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 annotation update)
domain (N-terminus)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sequence update)
                                                                                                                                                                                                                                          -IEBKVVF 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Clostridiales;
                                                                         402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         642
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 16;
                                                                       B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      £
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          129;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 642;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Clostridiaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 and S1 ribosomal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Daly M.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                        293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62
```

```
$
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           봆
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OCC CAN REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT OF THE REPORT O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Nakamura Y., Kaneko T., Sato S., İkeuchi M., Katoh H., Sasamot Watanabe A., Iriguchi M., Kawashima K., Kimura T., Kishida Y., Kiyokawa C., Kohara M., Matsumoto M., Matsumo A., Nakazaki N., Shimpo S., Sugimoto M., Takeuchi C., Yamada M., Tabata S.; "Complete genome structure of the thermophilic cyanobacterium "Romanda M., Tabata S.; "Beroose structure of the thermophilic cyanobacterium DNA Res. 9:123-130 (2002).

EMBL, AP005372, BAC08594.1; -.
                                                                                                                                                                                                                                                           Spermatophyta; Magnoliophyta; Ranunculaceae; Adonis.
                                                                                                                                                                                                                                                                                                               Eukaryota; Viridiplantae;
                                                                                                                                                                                                                                                                                                                                                                                           LYTB-like
                                                                                                                                                                                                                                                                                                                                                                                                                    01-MAR-2001
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q9FEP0;
01-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q9FEP0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                       Adonis palaestina
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=32046;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Synechococcus elongatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-MAR-2003 (TrEMBLrel.
Tlr1041 protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=22225144;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN-BP-1
                                                                                                                                                                                                                               ICBI_TaxID=151078;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            109;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GVKDFSGVRPGDVVILPAFGASVQEMQLLNERGCTIVDTTCPWVSKVWHSVEKHKKVSFT 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VILIGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNL-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              --EELSDVPVGSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKHAKQGRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ADRIGPGNRIEHKPLHQNPTVAENWLPDRPITIGITSGASTPDKVVEEVLNKIFA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KEQKKODICYATQNRQDAVHDLAKIS-DLILVVGSPNSSNSNRLREIAVQLGKPAYLIDT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AKFAKACSPGFDPDRDLVRVGIANQTTMLKGETEQIGKLFERTMIQKYGPDRLNEHFMSF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ----KVNNP-----NDLAYV---TQTTLSMTDT------KVMV-----DALREQFPSI 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IVLANPRGFCAGVDRAIEIVDQAIEAFGAP-IYVRHEVVHNRTVVDGLKQKGAVFI----
                                                                                                                                                                                                                                                                                                                                                                                        protein precursor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Cyanobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                              (TrEMBLrel. 16, (TrEMBLrel. 16, (TrEMBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ---NTICDATQERQDAMLSLVKEPLDLMVVIGGYNSSNTTHLQEIAIBHGIPSYHIDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              402 AA; 45213 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PubMed=12240834;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  21.1%; Score 343; DB 16; 30.7%; Pred. No. 1.3e-17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -YQD--LKQDWLEGIEV-VGVTAGASAPEVLVQEVIDQLKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (Thermosynechococcus
                                                                                                                                                                                                                                                                                   Streptophyta; Embryophyta; Trache
yta; eudicotyledons; Ranunculales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Chroococcales;
                                                                                                                                                                                                                                                                                                                                                                                                           , Created)
, Last seq
, Last anno
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -SSFAGTYLI-----VLNLEEARYVCDYILHGGDRAAFM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FB0851B618B73510 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                              sequence update)
annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      464
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Synechococcus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ድ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                              update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                elongatus)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                            Tracheophyta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sasamoto
hida Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           57
```

MEDLINE=20461233; PubMed=11004185; Cunningham F.X. Jr., Lafond T.P., Ga "Bvidence of a Role for LytB in the Isoprenoid Biosynthesis.";
J. Bacteriol. 182:5841-5848(2000).

AAG21984.1;

TISSUE=Immature and developing flowEDLINE=20461233; PubMed=11004185;

flower buds

Gantt

Ħ

Nonmevalonate

Pathway

ō,

```
RESULT 15
Q94B35
ID Q94B3
AC Q94B3
DT 01-DI
DT 01-DI
DT 01-MI
DT 01-MI
OS Araba
OC Sperion
OX NCB
RN (1)
RP SEQ
RA NGU
RA Chi
RA Chi
RA EC
RU SI
RA SI
RA EC
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
RA SI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ঠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S
Matches 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q94B35

Q94B35;
Q94B35;
Q1-DEC-2001 (TrEMBLrel. 19, Created)
Q94B35;
Q1-DEC-2001 (TrEMBLrel. 19, Last sequence update)
Q1-DEC-2001 (TrEMBLrel. 23, Last annotation update)
Q1-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Q1-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Q1-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Q1-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Q1-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Q1-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Q1-MAR-2003 (TrEMBLrel. 23, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (TrEMBLrel. 19, Last sequence update)
Q1-MAR-2003 (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        InterPro; IPR003451; LytB.
Pfam; PF02401; LYTB; 1.
TIGRFAMS; TIGR00216; ispH_lytB; 1.
Transit peptide.
TRANSIT 1 37
                                 Southwick A., Karlin-Neumann G., Nguyen M., Lam S., Miranda M., Palm C.J., Bowser L., Jones T., Banh J., Carninci P., Chen H., Cheuk R., Chung M.K., Hayashizaki Y., Ishida J., Xamiya A., Kawai Kim C., Lin J., Liu S.X., Narusaka M., Pham P.K., Sakano H., Sakurai T., Satou M., Seki M., Shinn P., Yamada K., Shinozaki K., Scker J., Theologis A., Davis R. W., Submitted (FEB-2002) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.

Nguyen M., Karlin-Neumann G., Southwick A., Lam B., Miranda M.,
Palm C.J., Bewser L., Jones T., Banh J., Carninci P., Chen H.,
Cheuk R., Chung M.K., Hayashizaki Y., Ishida J., Kamiya A., Kawai
Kim C., Lin J., Liu S.X., Narusaka M., Pham P.K., Sakano H.,
Sakurai T., Satou M., Seki M., Shinn P., Yamada K., Shinozaki K.,
Ecker J., Theologis A., Davis R.W.;
Submitted (JUN-2001) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=3702;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        443
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VKLAESYGECWGVERAVQIAYEARKQEPDEKIWITNBIIHNPTVNKRLEEM-----EVK 164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KAVEDAL 449
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MARKYGVENINDHFISF-----NTICDATQBRQDAMFKLVBEKVDLILVVGGWNSSNTSH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EIPVGDGKKHFDVVAKGDVVILPAFGAAVSEMLTISEKNVQIVDTTCPWVSKVWNSVEKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DVPV-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VLVQEVI 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LREIAVQLGKPAYLIDTYQDL-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ---KVMVDALREQFPSIKEQKKDDICYATQNRQDAVHDLAKIS-DLILVVGSPNSSNSNR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ILGGELNGSSSDKQALLEKFKYAISEGFDPDTDLIKTGIANQTTMLKGETEDIGKLLEKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AKQGREVILIGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNNPNDLAYV---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LQEISELRGIPSYWIDSETRIGPGNXISHXLNHGELVETENWLPEGPVTIGVTSGASTPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KKGEYTSIIHGKYSHEETIAT-----ASFAGKYII------VKNMDEAMYVCDY 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      464 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  37 P
52112 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     18.8%; Score 305; DB 10; 26.7%; Pred. No. 1.2e-14; tive 50; Mismatches 103;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -GSYLIFSAHGVSKEVQQEAEERQLTVFDATCPLVTKVHMQVAKH 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  POTENTIAL.
; 702D1F0ED3669D45 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          103;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ---KQDWL-EGIEVVGVTAGASAPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----TQTTLSMTDT-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 464;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          116;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ٠
:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 224
```

```
5
                                                               문
                                                                                             Ş
                                                                                                                              문
                                                                                                                                                           δ
                                                                                                                                                                                              맑
                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                              문
                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local S
Matches 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Hsieh M.-H., Goodman H.M.;

"The Arabidopsis IspH (LytB) homolog: Its role in chloroplast development and maintenance of thylakoid membranes.";

Submitted (OCT-2002) to the EMBL/GenBank/DDBJ databases.

EMBL; AY042877; AAK68817.1; -.

EMBL; AY081454; AAM10016.1; -.

EMBL; AY0818881; AAN87171.1; -.

InterPro; IPR003451; LytB.

Pfam; PF02401; LYTB; 1.

TIGRPAMS; TIGR00216; ispH_lytB; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hypothetical protein. SEQUENCE 466 AA; 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
   36E
                                244
                                                                                               185
                                                                                                                                                                160
                                                                                                                                                                                                                               116
                                                                                                                                                                                                                                                                                                                             113
                                                                                                                               281
                                                                                                                                                                                              233
                                                                                                                                                                                                                                                                                              58
                                                                                                                                                                                                                                                                                                                                                             w
                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                           VKLAKAYGPCWGVERAVQIAYBARKQPPEBRLWIINEIIHNPTVNKRLEDMDVKIIPVED
                                                                                                                                                                                                                                                                                                                                            IVLANPRGFCAGVDRAIEIVDQAIEAFGAP-IYVRHEVVHNRTVVDGLKQKGAVFI----
SYMIDSEKRIGPGNKIAYKLHYGELVEKENFLPKGPITIGVTSGASTPDKVVEDAL
                                  AYLIDT --
                                                           GHFIST----NTICDATQERQDAIYELVEEKIDLMLVVGGMNSSNTSHLQEISEARGIP
                                                                                 EQFPSIKEQKKDDICYATQNRQDAVHDLAKIS-DLILVVGSPNSSNSNRLREIAVQLGKP
                                                                                                                                                                                             SVIHGKYNHEETIAT-----ASFAGKYII-----VKNMKBANYVCDYILGGQYDGSSS
                                                                                                                                                                                                                           VILIGHAGHPEVEGTMGQYEKCTEGGGIYLVETPEDVRNLKVNN-------
                                                                                                                                                                                                                                                              SKKQPDVVEKDDVVILPÅPGAGVDEMYVLNDKKVQIVDTTCPWVTKVMNTVEKHKKGEYT 232
                                                                                                                                                                                                                                                                                          --EBLSDVPVGSYLIFSAHGVSKBVQQEABBRQLTVPDATCPLVTKVHMQVAKHAKQGRE
                                                                                                                               TKEEFMEKFKYAISKGFDPDNDLVKVGIANQTTMLKGETEEIGRLLETTMMRKYGVENVS
                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                           52781 MW; B008808517890DC6 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                            18.5%; Score 300; DB 10; 27.5%; Pred. No. 2.8e-14; tive 56; Mismatches 108;
                                                                                                                                                              -----PNDLAYV---TQTTLSMTDT-----
                         YQDL--KQDWL-EGIEVVGVTAGASAPEVLVQEVI
                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                            466;
                                                                                                                                                                KVMVDALR 184
   451
                                  281
                                                                                                                                                                                                280
                                                                                                                                                                                                                             159
                                                                                                                                                                                                                                                                                                                                                               57
```

Search completed: January 29, 2004, 15:54:14
Job time: 25.7034 secs

		,	
_			